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AUSTRALASIAN ANTARCTIC EXPEDITION

1911-1914.

UNDER THE LEADERSHIP OF SIR DOUGLAS MAWSON, D.Sc., B.E.

---

SCIENTIFIC REPORTS.

SERIES C.—ZOOLOGY AND BOTANY.

VOL. V. PART I.

---

ARACHNIDA FROM MACQUARIE ISLAND

BY

W. J. RAINBOW, F.E.S.,

AUSTRALIAN MUSEUM, SYDNEY.

WITH FOURTEEN FIGURES IN THE TEXT.

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NATIONAL MUSEUM MELBOURNE

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# ARACHNIDA FROM MACQUARIE ISLAND.

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By W. J. RAINBOW, F.E.S., Entomologist to the Australian Museum.

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The Arachnid material collected by the Australian Antarctic Exploring Expedition on Macquarie Island was, as one would naturally expect, small in point of species. The collection consists of one Pœcilophysid and two Araneids. Of the first named, there are about half a dozen examples, while in respect of the spiders one species is represented by one specimen, and that an undescribed male; of the second, there is a fair number of specimens, and both males and females are represented. In this case, too, the male is a novelty, and both will be found described hereunder.

The Pœcilophysid is interesting from the fact that it was originally discovered on Kerguelen Island by the Rev. A. E. Eaton, who accompanied the Transit of Venus Expedition to that island in 1874, and was described and figured by the Rev. O. P. Cambridge in 1876.

Order PÆCILOPHYSIDEA.

Family PÆCILOPHYSIDES.

Genus Pœcilophysis O. P. Camb.

PÆCILOPHYSIS KERGUELENENSIS O. P. Camb.

*Pœcilophysis kerguelenensis* O. P. Camb., Proc. Zool. Soc., 1876, p. 263, pl. XIX., fig. 4.

Among the material collected on Macquarie Island there were half a dozen examples of a curious and minute Arachnid, and these bear out Cambridge's description of the above. Hamilton's note in respect of the species reads:—"Small spiders, common under moss and tussock. Distributed generally over island. Date: 30.8.12. Original colour: yellowish white."

In commenting upon the Kerguelen material, Cambridge remarked—"The whole collection consisted but of five species—one of Araneidea and three Acaridea, the fifth being that upon which I propose to found a new genus, family, and order. At first sight this delicate little Arachnid gave me the idea of a Chelifer deprived of its forcipated palpi, but a subsequent examination with a stronger lens showed me that it possessed palpi of an entirely different character from those of the pseudo-Scorpiones; and a final scrutiny under a still higher power led to the detection of eyes. In the number and



position of these there is a remarkable similarity to the Solpugidea, while there are not wanting some general indications of affinity to the Araneidea. Its small size and general appearance when alive would probably induce one to place it among the Acaridea; but the structure of the mouth parts, the distinct cephalothorax and abdomen, and especially the character of the eyes, seem to preclude this allocation.”\*

In working over literature it does not appear that this species has been met with since 1876, consequently Mr. Hamilton's find is distinctly interesting.

### Order ARANEIDEA.

In his paper, “Spiders and Opalines from the Subantarctic Islands of New Zealand,”† Mr. H. R. Hogg, M.A., recorded 14 species of spiders of which all, save two, were new. These species were found upon Campbell, Snares, Auckland, Bounty, Macquarie, and Enderby Islands respectively. Mr. Hamilton's material, however, came solely from Macquarie Island, and consists only of two species—a *Mynoglenes* Sim., and a *Myro* O. P. Camb.

#### Family AGALENIDAE.

#### Subfamily CYBÆNIAE.

#### Group CYBÆEAE.

#### Genus *Mynoglenes* Sim.

#### MYNOGLENES MARRINERI Hogg.

(Figs. 1 and 2.)

*Mynoglenes marrineri* Hogg, Subantarctic Is. of New Zealand, vol. I., 1909, p. 165, pl. VIII., figs. 1a—1c.

Only one example was obtained, and this, I think, can be no other than Hogg's species. The material worked out by the author just quoted consisted of three females from Monument Harbour, Campbell Island, and another slightly smaller from Enderby Island. Those found by Mr. Marriner, at Monument Harbour, were taken from under stones on the seashore. Mr. Hamilton's note reads:—“Spider. Taken on my person when in the vicinity of sealers' huts (probably introduced), north end Macquarie Island. Date: 26.2.13.”

♂ Cephalothorax, 2·3mm. long, 1·7mm. broad; abdomen, 2·8mm. long, 1·4mm. broad.

*Cephalothorax*.—Obovate, dark yellowish brown, smooth, glossy. *Pars cephalica* raised, strongly arched, a long, dark, brown median stripe is present; *ocular area* broader

\* Cambridge.—Proc. Zool. Soc., 1876, p. 259.

† Hogg.—Subantarctic Islands of New Zealand, vol. I., 1909, pp. 155-179, pls. VII. and VIII.



than long; *clypeus* broad, deep, perpendicular. *Pars thoracica* broad, arched, radial grooves dark brown; *thoracic fovea* broad, deep, profound, longitudinal; lateral angles rounded, posterior angle indented; *marginal band* narrow, dark brown.

*Eyes*.—Eight, in two rows of four each; anterior row slightly recurved, rear row slightly procurved; anterior median eyes smallest of the series, and posterior median eyes slightly the largest; lateral eyes equal in size, and each pair raised upon a protuberance (see Hogg's description and figures); surrounding the eyes are a few scattered erect hairs.

*Legs*.—Long, tapering, clothed with short, fine hairs, and sparingly armed with fine, moderately long spines; the coxa, trochanter, and femur of each ambulatory limb yellow, while each tibia and metatarsus is broadly ringed with yellow brown; tarsi, yellow brown. The following are the measurements in millimetres:—

Leg.	Coxa.	Trochanter and Femur.	Patella and Tibia.	Metatarsus and Tarsus.	Total.
1	0.5	2.2	2	3	7.7
2	0.5	2.2	2	3	7.7
3	0.5	2	1.5	2.3	6.3
4	0.5	2.5	2.8	3.5	9.3

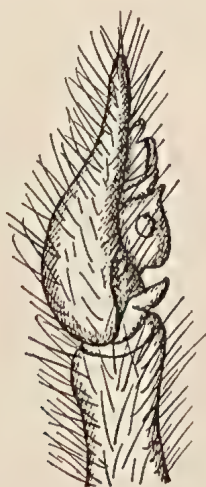


Fig. 1—*Mynoglenes marrineri* Hogg ♂  
Palpus.

*Palpi*.—Moderately long, slender, similar in colour and armature to legs, yellow, genital bulb darker (fig. 1). Measurements in millimetres—Coxa, 0.3; trochanter and femur, 1; patella and tibia, 0.8; genital bulb, 0.5; total, 2.6.



*Falces*.—Yellow brown, broad, divergent, long, arched, moderately clothed with rather long hairs; inner margin of the furrow of each falx armed with two moderately strong teeth, one of which is at the base and one near the fang; outer margin armed with five teeth; fang, long.

*Maxillæ*.—Concolorous, except at apex, where they are yellowish, arched, inclined inwards, furnished with a few long, erect hairs.

*Labium*.—Somewhat darker, broader than long, arched, apex rounded, and furnished with a few long and erect hairs.

*Sternum*.—Dark brown, shield-shaped, broad in front, pointed at rear, slightly arched, granulated, and furnished with a few long and erect black hairs; lateral angles hollowed in front of each coxa.

*Abdomen*.—Oval, narrower than cephalothorax, arched, pubescent, and ornamented with a broad wavy lateral band of dark brown and a few median spots of same colour;



Fig. 2—*Mynoglenes marrineri* Hogg ♂  
Abdomen.

laterally there are, close together, a series of dark-brown, wavy, pencillings, whilst ventrally the dull yellowish tint is rendered darker by a number of small, dark-brown spots (fig. 2).

Genus *Myro* O. P. Camb.

*MYRO HAMILTONI* Hogg.

(Figs. 3-14.)

A considerable number of specimens of this species was collected by Mr. H. Hamilton. One series, consisting of four females, three males, and one very young example, were obtained during January and February, 1912, and the collector's note with this, in addition to date, reads—"Spiders (*Myro hamiltoni*). Collected at various times—chiefly on *Stilbocarpa polaris*. North end Macquarie Island."

Series No. 2 consists of 11 females (a couple of which are immature) and six males; there is also one egg sac. The note with this species reads—"Spiders. Found under masses of *Cotula plumosa*, Aerial Cove, Macquarie Island. Date: 2.8.12. Colour: abdomen, dark brown to black."



Series No. 3 contains four adult females, one about half-grown, and one very young example, and the collector's note accompanying the series is as follows:—"Spiders (*Myro hamiltoni*). Taken under stones on site of Victoria penguin rookery (deserted). North end Macquarie Island. Date: 16.8.12. Colour: light brown."

An examination of the specimens collected by Mr. Hamilton, as narrated above, disclosed the fact that the species not only shows a close affinity to *M. kerguelensis* Camb., but also it is exceedingly variable in point of colour pattern in both sexes, and



Fig. 3—*Myro hamiltoni* ♀ Hogg.  
Abdomen.



Fig. 4—*Myro hamiltoni* ♀ Hogg.  
Abdomen.

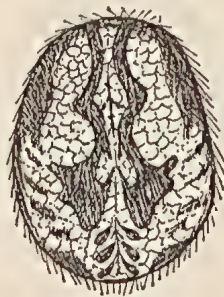


Fig. 5—*Myro hamiltoni* ♀ Hogg.  
Abdomen.



Fig. 6—*Myro hamiltoni* Hogg ♀  
Abdomen.



Fig. 7—*Myro hamiltoni* ♀ Hogg.  
Abdomen.

to demonstrate this I submit herewith five figures of the abdomen (figs. 3-7) and two (figs. 8 and 9) of the male. Some of the females are decidedly pretty. The darker coloured forms are the commonest, and their ornamentation may be taken as the most typical; the white patches, where they occur, as also the white bars—whether longitudinal or transverse—are delicately reticulated; in some examples there is also a



delicate, wavy, and irregular scheme of tracery. Forms agreeing with Hogg's description of abdominal markings occur, but in the three series before me they are the least numerous.



Fig. 8—*Myro hamiltoni* ♂ Hogg.  
Abdomen.



Fig. 9—*Myro hamiltoni* ♂ Hogg.  
Abdomen.

I was rather puzzled, however, in respect of Hogg's interpretation of the eye formula, and his description and figures of the epigynum. In respect of the latter, my friend says—"The epigyne is oval, longer than broad, with a rectangular opening reaching from the base to two-thirds of its height upwards."\*

In the examples collected by Mr. Hamilton the epigynum conforms more nearly to *M. kerguelensis*; also, the lateral eyes of the second row are poised obliquely, while the anterior median eyes do not touch their lateral neighbours as depicted by Mr. Hogg.† In fact, the eye formula is very like that of Cambridge's species. Probably the effects as suggested by the figures referred to may be due to the angle at which the specimens were viewed. Being confronted with these difficulties, I wrote to Dr. J. Allan Thompson, Director of the Dominion Museum, Wellington, inquiring as to the whereabouts of the type (*M. hamiltoni*); the latter, however, was not in the museum over which he has charge, but he very courteously interested himself in my behalf, with the result that Professor W. B. Benham, of the Otago University Museum, came to my aid. I wish, here, to record my sincere thanks to each of these gentlemen. Professor Benham, without hesitation or loss of time, forwarded me all his specimens of *M. hamiltoni*, including the type, for examination and comparison with my material. The following are my descriptions and figures of the eye formula and epigynum from the type:—

*Eyes.*---Ocular area longer than broad. Eyes 8, in two strongly procurved rows of four each; eyes of rear row about equal in size, and mounted on small black tubercles;



Fig. 10—*Myro hamiltoni*.  
Eyes.

the black tubercles of the rear pair are obtusely pointed both in front and behind; posterior lateral eyes seated obliquely; anterior lateral eyes are also obliquely poised,

\* Hogg.—Subantarctic Is. of New Zealand, vol. I., p. 173, pl. VIII., fig. 5a.

† Hogg.—*Loc. cit.*, fig. 5h.



and are small ; intermediate anterior pair minute, and separated from each other by a space equal to their individual diameter ; viewed from certain angles these latter appear to touch their lateral anterior neighbours, but in reality this is not so (fig. 10).

*Epigynum*.—Transversely oval, similar in many respects to *M. kerguelensis*, but nevertheless distinct therefrom. To appreciate this, compare Cambridge's figure\* with the one (*M. hamiltoni*) given herewith. The lateral discs indicated in the diagram are very indistinct and so are not easily seen (fig. 11). There is some slight variation noticeable in different individuals, but these do not interfere with the general formation or appearance.



Fig. 11—*Myro hamiltoni*.  
Epigynum.

*Ova Sac*.—The ova sac is white, round, about 15mm. in circumference, plano-convex, strongly arched, closely woven, tough, and surrounded at base by a flattened extension or flange, the latter being about a millimetre in breadth. From its appearance it had evidently been attached to a stone. The following is the description of the male :—

♂ Cephalothorax—2.1mm. long, 1.6mm. broad ; abdomen, 2.6mm. long, 1.8mm. broad.

*Cephalothorax*.—Smooth ; in some specimens straw yellow with dark-brown markings, the latter variable in different examples ; in other specimens the cephalothorax is of a cloudy yellow, suffused with brown, and having dark-brown markings. *Pars cephalica* raised, strongly arched, furnished with a double row of long black bristles running along the median line from base to apex ; there are also a few distributed over the lateral areas ; *ocular area* longer than broad, the front fringed with long, black, bristles ; *clypeus* sinuous, inclining inwards, *pars thoracica* arched, radial grooves distinct and darker than the surface ; surface provided with a few scattered hairs ; *thoracic fovea* long and narrow, and having the appearance of a dark, strongly pencilled line ; this groove, which is not deep, extends in a straight line from base of cephalic segment towards the lateral angle, and is nearly half as long as that segment ; *marginal band* slightly reflexed and dark brown in all specimens.

*Eyes*.—Similar to those of the ♀ (fig. 10).

*Legs*.—Long, tapering ; in the lighter-coloured specimens the coxæ and femora are straw yellow, but the other joints are reddish yellow ; in the darker specimens the legs are brownish yellow, and their femora more or less distinctly annulated with brown ; these annulations are most distinct on the underside ; all the legs are clothed with short,

\* Cambridge.—Proc. Zool. Soc., 1876, pl. XIX., fig. 5h.



fine hairs, and armed with long spines, some of which are at right angles to the different joints; claws as described by Hogg. The following are the measurements in millimetres:—

Leg.	Coxa.	Trochanter and Femur.	Tibia and Patella.	Metatarsus and Tarsus.	Total.
1	0.7	1.7	2	2.5	6.9
2	0.7	1.7	2	2.5	6.9
3	0.7	1.6	1.8	2.2	6.3
4	0.7	1.9	2.1	2.7	7.4

*Palpi*.—Equal in length to cephalothorax, each example however variable, similar in colour and armature to legs; cubital joint short and bent; radial joint slightly longer, and produced on its outer angle into a distinct and prominent apophysis, similar

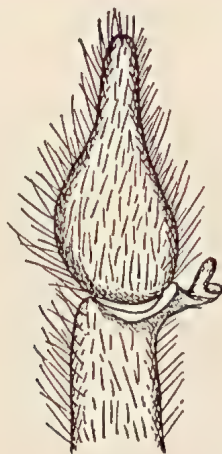


Fig. 12—*Myro hamiltoni* ♂  
Palpus, from above.

to that of *M. kerguelenensis* O. P. Camb. (fig. 12); digital joint long and narrow and bluntly acuminate; palpal organs are again similar to the species just quoted. For details, see figs. 13 and 14.



Fig. 13—*Myro hamiltoni* Hogg ♂  
Palpus, from the side.

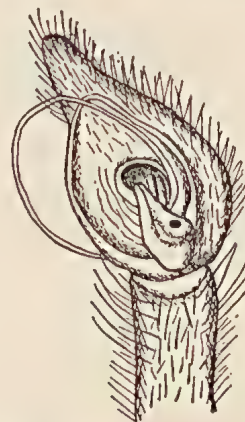


Fig. 14—*Myro hamiltoni* ♂ Hogg.  
Palpus, from beneath.



*Falces*.—In each case similar in colour to cephalothorax, long, arched, vertical, strong; inner angle of each falx armed as in the ♀ with two large teeth and one small one; outer angle armed with five small teeth; fang, long.

*Maxillæ*.—Long, arched, yellow brown (darker in some specimens), curving inwards; apices produced, somewhat club-shaped; inner apical angles rather obliquely truncated; surface of each sparingly clothed with stiff, bristly hairs.

*Labium*.—Yellow brown, lighter at tip; nearly as broad as long, rather more than half as long as maxillæ; apex rounded; sparingly clothed with short, blunt, bristly hairs.

*Sternum*.—Yellowish, suffused with dark brown laterally; arched, cordate, terminating in a somewhat obtuse point between fourth pair of coxæ; surface moderately clothed with short, stiff, black hairs.

*Abdomen*.—Ovate, moderately overhanging base of cephalothorax; hairy; arched; colour and ornamentation variable (figs. 8 and 9), some examples being much darker than the others; in the majority of cases the abdomen of the ♂ is dark brown (almost black), with pale yellowish, longitudinal and transverse bars (echelons) and spots; other examples are of a lighter brown, with large yellowish areas relieved by dark-brown transverse bars (echelons) or dark-brown patches; in the dark forms the underside is dark yellowish brown, with two slightly curved lateral, longitudinal yellow stripes, which latter commence near the *rima epigasteris* and terminate just in front of the spinnerets; in the lighter coloured forms the ventral surface is yellowish and suffused in parts with brown.







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BY

MARY J. RATHBUN,

U.S. NATIONAL MUSEUM, WASHINGTON, U.S.A.

WITH ONE FIGURE IN THE TEXT.

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# BRACHYURA.

By MARY J. RATHBUN. U.S. National Museum, Washington.

The crabs are referable to three species, two of which are well known. The third is a *Megalops* of large size which cannot be assigned to any described form, but appears to belong to Dana's genus *Marestia*. The identity of the adult form of the species of this genus is still to be determined.

## HALICARCINUS PLANATUS (*Fabricius*, 1775).

For synonymy, see Stebbing, Trans. Roy. Soc. Edinburgh, vol. 50, 1914, p. 271. Macquarie Island :—

- (1) Under stones and on spongy covering to rocks below low water; 24 females. Variously coloured, in spirit, from slaty-blue to reddish-brown, legs banded. Some with *Spirorbis* encrusting.
- (2) C. 38; Hamilton; 4 females, 2 juv.
- (3) C. 51; 3 juv.
- (4) Common under stones, North end; 6 females, soft shell (3 ovig.). Some with *Spirorbis* encrusting.
- (5) Under stones, littoral zone; 1 female ovig.
- (6) 1 female, 3 juv.
- (7) 1 female, 7 juv.

All the specimens have the posterior of the lateral teeth of the carapace well developed and acute, while the anterior tooth is variable, often obsolescent—that is, obtuse-angled and blunt; in other cases acute or even sharp-pointed, and in a few specimens sharp on one side of the carapace and reduced on the other. The lateral teeth of the front are well separated from the median tooth, and are produced downward at the sides so that their inner surface is concave.

## NECTOCARCINUS ANTARCTICUS (*Jacquinet*.)

*Portunus antarcticus* Jacquinet, in Jacquinet and Lucas, Voy. au Pôle Sud, Zool., vol. 3, 1853, Crust., p. 51; atlas, plate V, figs. 1–5.

1 male, 2 females, without indication of locality. Known only from New Zealand and the Auckland Islands.

## MEGALOPS STAGE OF CRAB, THE ADULT OF WHICH IS UNKNOWN.

MARESTIA *Dana*.MARESTIA MAWSONI, *new species*.(Fig. 1, *a-h*.)

*Type locality*.—Surface, off coast Macquarie Island, May 20, 1912; 5 specimens, accidentally dried in transportation.

*Size*.—Length of carapace on median line, 7 mm.

*Description*.—Resembles *M. atlantica* Dana,\* the carapace being narrowed anteriorly, and flattened. The edge of the front, seen from above, has a similar indentation, but it is U-shaped, not V-shaped. The rostrum is vertical and has a rounded instead of a pointed tip. The upper margin of the orbit has a thin edge, and the adjacent carapace is depressed and furrowed. The large eyes have a large terminal cornea. Terminal segment of abdomen broader than long, margin arcuate and entire.

Chelipeds short, stout; upper edge of merus acute, very finely serrulate; carpus rounded, finely roughened, a depression near middle of outer surface; chela thick; palm flattened above, outer surface with 2 or 3 shallow, longitudinal depressions on the upper two-thirds, intervening ridges finely roughened; fingers irregularly toothed, crossing at tips, narrowly gaping at base, a slender tooth projecting from the dactylus into the gape. Ambulatory legs similar to those of *atlantica*; dactyli armed with 6 or 7 uneven spines, the fifth spine from the proximal end being the longest; the dactyli of the last pair have at the extremity 4 long setæ.

---

\*Crustacea U.S. Expl. Exped., Vol. 1, 1852, p. 489; atlas, 1855, pl. XXXI, figs. 3a—3g.





Fig. 1.—*Marestia mawsoni*,  $\times 3$ .

*a.*—Dorsal view of paratype, without chelipeds.

*b.*—Front view of another paratype.

*c.*—Right cheliped, dorsal view.

*d.*—Left cheliped, dorsal view.

*e.*—Left cheliped, ventral view.

*f.*—Ambulatory leg of first pair.

*g.*—Ambulatory leg of third pair.

*h.*—Ambulatory leg of fourth pair.





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1911-14.

UNDER THE LEADERSHIP OF SIR DOUGLAS MAWSON, D.Sc., B.E.

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SCIENTIFIC REPORTS,  
SERIES C.—ZOOLOGY AND BOTANY.  
VOL. V. PART 3.

---

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BY

G. STEWARDSON BRADY, M.D., LL.D., D.Sc., F.R.S.

WITH FIFTEEN PLATES

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Plates I-XV.



# COPEPODA.

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By G. STEWARDSON BRADY, M.D., LL.D., D.Sc., F.R.S.

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(Plates I–XV.)

THE material submitted to me for investigation was unsorted, and was contained in a series of tubes, the contents of which were collected in the Antarctic and Sub-Antarctic areas between the dates of 21st June, 1912, and 2nd February, 1914. There was no dredged material, all the collections being tow-nettings, and some few of the tubes contained no recognisable copepoda. The number of species noted in this report is fifty-three, twenty-five of which appear to have been hitherto undescribed. Among these are six new genera, of which the descriptions I have been able to give are not always full enough to be quite satisfactory, owing to the paucity or poor condition of the specimens available. Several of the more prevalent Antarctic forms were previously known only from the descriptions of Dr. Giesbrecht in his report on the voyage of s.s. “Belgica.” These seem to be purely Antarctic species, while, on the other hand, a few seem to be almost cosmopolitan in distribution, as for instance *Calanus propinquus*, *Rhincalanus gigas*, and *Microsetella atlantica*, while one or two, such as *Calanus finmarchicus* and *Oncaea conifera* would appear to be more especially denizens of the far North and far South—Arctic and Antarctic—although the last-named species is likewise recorded by Giesbrecht in his work on the Neapolitan Copepoda.

The new genera here described are :—

*Diarthropus*.

*Streptocalanus*.

*Euchaetopsis*.

*Pseudoōthrix*.

*Plagiopus*.

*Mawsonella*.

The new species are :—

*Calanus aculeatus*.

*Diarthropus torticornis*.

*Paracalanus Mariæ*.

*Streptocalanus typicus*.



*Gaetanus antarcticus.*

*Gaidius glacialis.*

*Euchirella plumosa.*

„ *tumida.*

*Paraeuchaeta plumifera.*

*Euchaetopsis Haswelli.*

*Pseudoöthrix anatinus.*

*Plagiopus australis.*

*Stephos simillimus.*

*Metridia Andræana.*

„ *trispinosa.*

*Pleuromamma Wolfendeni.*

*Heterorhabdus Farrani.*

„ *nigrotinctus.*

*Mawsonella typica.*

*Amphiascus elegans.*

„ *ignotus.*

*Stenhelia glacialis.*

*Laophontodes latissimus.*

„ *antarcticus.*

„ *echinatus.*

## LIST OF STATIONS FROM WHICH COPEPODA ARE HERE RECORDED.

- 
1. Off Macquarie Island, tow-net, 2 fathoms. (21st June, 1912.)
  2. Off Maria Island, Tasmania, surface tow-net.
  3. From Macquarie Island.
  4. Off Macquarie Island, tow-net at night. (11th June, 1912.)
  5. „ „ at sunrise. (11th June, 1912.)
  6. „ „ all night. (11th June, 1912.)
  7. Tow-net, 45 fathoms among pack-ice, Lat.  $64^{\circ} 18' S.$ ; Long.  $132^{\circ} 24' E.$ ; Temp.  $5^{\circ} C.$  (4th January, 1914.)
  8. „ 50 fathoms, Lat.  $64^{\circ} 34\frac{1}{2}' S.$ ; Long.  $127^{\circ} 8' E.$  (6th January, 1914.)
  9. „ 100 fathoms. „ „
  10. „ 25 fathoms, Lat.,  $64^{\circ} 34' S.$ ; Long.,  $117^{\circ} 1' E.$  (10th January, 1914.)
  11. „ 100 fathoms, Lat.,  $64^{\circ} 34' S.$ ; Long.,  $117^{\circ} 1' E.$  (10th January, 1914.)
  12. „ 100 fathoms, Lat.,  $64^{\circ} 50\frac{1}{2}' S.$ ; Long.,  $113^{\circ} 16' E.$  (9th January, 1914.)
  13. „ 50 fathoms, Lat.,  $63^{\circ} 15' S.$ ; Long.,  $101^{\circ} 42' E.$  (9th January, 1914.)
  14. „ 100 fathoms, Lat.,  $64^{\circ} 37' S.$ ; Long.,  $108^{\circ} 50' E.$  (12th January, 1914.)
  15. „ 20 fathoms, Lat.,  $64^{\circ} 32\frac{1}{2}' S.$ ; Long.,  $91^{\circ} 20' E.$  (21st January, 1914.)
  16. „ 25 fathoms, Lat.,  $63^{\circ} 28\frac{1}{2}' S.$ ; Long.,  $90^{\circ} 22' E.$  (7th February, 1914.)
  17. „ Carnley Harbour, Auckland Islands.
  18. „ 2 fathoms, all night, Lusitania Bay, Macquarie Island.
  19. „ 100 fathoms, Lat.,  $63^{\circ} 15' S.$ ; Long.,  $101^{\circ} 42' E.$ ; Temp.  $1.4^{\circ} C.$
  20. „ Surface, Macquarie Island. (6th June, 1912.)

## LIST OF STATIONS AT WHICH COPEPODA WERE TAKEN, WITH NAMES OF THE SPECIES.

The descriptions of the various stations are those officially supplied to me— but the numbers are such as I myself found convenient in working at the material, and do not entirely correspond with those given in the official list. Such stations as are omitted in the lists of species did not yield any recognizable specimens.

## STATION 20.

Surface off Macquarie Island. 6th June, 1912.

*Clausocalanus furcatus*.

## STATION 1.

Macquarie Island, tow-net, 2 fathoms, 21st June, 1912.

*Calanus propinquus*,

„ *tonsus*,

*Clausocalanus furcatus*,

*Aetideus armatus*.

*Scolecithrix Römeri*.

*Metridia Gerlachei*.

*Pleuromamma Wolfendeni*.

*Heterorhabdus austrinus*,

*Plagiopus australis*.

*Microsetella atlantica*.

*Machairopus Sarsi*.

„ *turgidus*.

*Dactylopusia brevicornis*.

*Laophontodes latissimus*.

## STATION 2.

Tow-net off Maria Island, Tasmania, surface.

*Calanus finmarchicus*.

„ *propinquus*.

„ *tonsus*.

„ *aculeatus*.

*Diarthropus torticornis*.

*Paracalanus Mariæ*.

*Clausocalanus furcatus*.



*Gaetanus antarcticus*.  
*Paraeuchaeta antarctica*.  
*Metridia Gerlachei*.  
*Oithona frigida*.

## STATION 3.

From Macquarie Island.

*Boeckella brevicaudata*.  
*Stenhelia glacialis*.  
*Streptocalanus typicus*.

## STATION 4.

Off Macquarie Island, tow-net at night. 11th June, 1912.

*Actideus armatus*.  
*Metridia Gerlachei*.  
*Haloptilus ocellatus*.

## STATION 5.

Off Macquarie Island, tow-net at sunrise. 11th June, 1912.

*Calanus propinquus*.  
*Clausocalanus furcatus*.  
*Plagiopus australis*.  
*Actideus Bradyi*.  
*Metridia Gerlachei*.  
*Spinocalanus Giesbrechti*.  
*Euchirella plumosa*.  
*Oithona frigida*.  
*Harpacticus pulvinatus*.  
*Laophontodes latissimus*.

## STATION 6.

Off Macquarie Island, tow-net all night. 11th June, 1912.

*Calanus aculeatus*.  
*Diarthropus torticornis*.  
*Euchaetopsis Haswelli*.  
*Stephos simillimus*.  
*Boeckella brevicaudata*.  
*Metridia andræana*.  
*Pleuromamma Wolfendeni*.  
*Scolecithrix Römeri*.  
*Oithona frigida*.

Tow-net, 45 fathoms among pack-ice, Lat.,  $64^{\circ} 18' \text{ S.}$ ; Long.,  $132^{\circ} 24' \text{ E.}$ ; Temp.,  $5^{\circ} \text{ C.}$  4th January, 1914.

### STATION 8.

*Calanus propinquus.*  
*Paracalanus parvus.*  
*Clausocalanus furcatus.*  
*Euchirella tumida.*  
*Euchaetopsis Haswelli.*  
*Streptocalanus typicus.*  
*Scolecithrix Römeri.*  
*Stephos longipes.*  
*Metridia Andraeana.*  
„ *Gerlachei.*  
*Halöptilus ocellatus.*  
*Microsetella atlantica.*  
*Amphiascus ignotus.*  
*Oncaea conifera.*

Tow-net, 100 fathoms, Lat.,  $64^{\circ} 34\frac{1}{2}'$  S.; Long.,  $127^{\circ} 8'$  E. 6th January, 1914.

*Calanus finmarchicus.*  
 „ *tonsus.*  
 „ *propinquus.*

*Rhincalanus gigas*.  
*Paraeuchaeta antarctica*.  
 „ *plumifera*.  
*Gaetanus antarcticus*.  
*Pseudoöthrix anatinus*.  
*Metridia Gerlachei*.  
*Heterorhabdus austrinus*.  
 „ *Farrani*.  
 „ *nigrotinctus*.  
*Racovitzanus antarcticus*.  
*Metridia Gerlachei*.

## STATION 10.

25 fathoms, Lat., 64° 34' S.; Long., 117° 1' E. 10th January, 1914.

*Calanus tonsus*.  
*Rhincalanus gigas*.  
*Gaetanus antarcticus*.  
*Paraeuchaeta antarctica*.  
*Streptocalanus typicus*.  
*Metridia Gerlachei*.  
 „ *trispinosa*.  
*Amphiascus elegans*.

## STATION 11.

100 fathoms, Lat., 64° 34' S.; Long., 117° 1' E. 10th January, 1914.

*Calanus propinquus*.  
 „ *aculeatus*.  
*Paraeuchaeta antarctica*.  
*Euchaetopsis Haswelli*.  
*Plagiopus australis*.  
*Streptocalanus typicus*.  
*Pseudoöthrix anatinus*.  
*Scolecithrix Römeri*.  
*Racovitzanus antarcticus*.  
*Boeckella brevicaudata*.  
*Metridia Gerlachei*.  
 „ *trispinosa*.  
 „ *andraeana*.  
*Heterorhabdus austrinus*.  
 „ *Farrani*.  
*Oncaea conifera*.



## STATION 12.

100 fathoms, Lat.,  $64^{\circ} 50\frac{1}{2}'$  S.; Long.,  $113^{\circ} 16'$  E. 9th January, 1914.

*Paraeuchaeta antarctica.*

*Plagiopus australis.*

*Heterorhabdus austrinus.*

## STATION 13.

50 fathoms Lat.,  $63^{\circ} 15'$  S.; Long.,  $101^{\circ} 42'$  E. 9th January, 1914.

*Calanus propinquus.*

„ *aculeatus.*

*Rhincalanus gigas.*

*Paracalanus parvus.*

*Euchirella tumida.*

*Scolecithrix Römeri.*

*Haloptilus ocellatus.*

## STATION 14.

100 fathoms, Lat.,  $64^{\circ} 37'$  S.; Long.,  $108^{\circ} 50'$  E. 12th January, 1914.

*Rhincalanus cornutus.*

*Gaetanus antarcticus.*

*Gaidius glacialis.*

*Paraeuchæta plumifera* (?).

## STATION 15.

20 fathoms, Lat.,  $64^{\circ} 32\frac{1}{2}'$  S.; Long.,  $91^{\circ} 20'$  E. 21st January, 1914.

*Calanus propinquus.*

*Longipedia Scotti.*

## STATION 16.

25 fathoms, Lat.,  $63^{\circ} 28\frac{1}{2}'$  S.; Long.,  $90^{\circ} 22'$  E. 7th February, 1914.

*Rhincalanus gigas.*

„ *cornutus.*

*Paraeuchæta antarctica.*

*Metridia Gerlachei.*

*Heterorhabdus austrinus.*

## STATION 17.

Carnley Harbour, Auckland Islands, tow-net.

*Paracalanus parvus.*

*Acartia ensifera.*

## STATION 18.

“Aurora,” sub-antarctic, Lusitania Bay, 2 fathoms, tow-net all night.

*Calanus aculeatus*.

*Paracalanus parvus*.

*Clausocalanus furcatus*.

*Oithona* sp.

*Tisbe tenuimana*.

*Machairopus Sarsi*.

„ *digitatus*.

## STATION 19.

Tow-net 100 fathoms, Lat., 63° 15' S.; Long., 101° 42' E.; Temp. 1°—4°C.

*Calanus tonsus*.

*Paraeuchaeta antarctica*.

## AMPHASCANDRIA.

## Family CALANIDÆ.

## Genus CALANUS Leach, 1816.

1. CALANUS FINMARCHICUS (*Gunnerus*).

*Calanus finmarchicus* Sars, 1901, Vol. IV, p. 9, plates I, II, III.

A few examples, which are indistinguishable from this northern species, except in point of size, were found in gatherings taken by the tow-net off “Maria Island, Tasmania.” Southern specimens (females only) are a little over 3 mm. in length, the normal length of the Norwegian animal, according to Professor G. O. Sars, being 4 mm., and of the largest Arctic specimens 5 mm. It is quite likely, however, that many other examples of the species may have been overlooked, it being impossible accurately to separate the various species without careful examination of each individual.

2. CALANUS PROPINQUUS *Brady*.

*Calanus propinquus* Brady, 1883, p. 34, plate II, figs. 1–7; plate XIV, figs. 10, 11.

„ „ Giesbrecht, 1902, p. 26; Taf. 1, figs 1–8.

This is by much the most abundant of all the Copepoda in the collections submitted to me. Scarcely any of the tubes were without examples of it, and in very many it constituted the greater part of the gathering. The following list indicates the localities in which I have notes of its occurrence.

## STATIONS 1, 2, 5, 7, 8, 9, 11, 13, 15.

I do not doubt that many specimens here referred to *C. propinquus* might properly be identified with *C. simillimus*, as defined by Dr. Wolfenden in his report on the Copepoda of the Antarctic expedition, and accepted by Dr. Giesbrecht in the "Belgica" report, though apparently only as a variety. But the variations as seen amongst the very numerous specimens are so interminable that I prefer to leave them as being simply indications of the latitude which, in this respect must be allowed to a widely distributed and evidently very prolific species.

3. *CALANUS ACULEATUS* *sp. nov.*

(Plate IX, figs. 19-23).

(?) *Calanus simillimus* Giesbrecht, 1902, plate I, fig. 9.

*Female*.—Length, 2.5 mm. Anterior division of the body seen dorsally, compressed, ovate, rounded in front, tapered rather abruptly behind, the last thoracic segment produced backwardly into two sharply aculeate spines; abdomen comparatively short, less than one-half the length of the cephalothorax; caudal laminae twice as long as broad, equal in length to the last abdominal segment, the second caudal seta very much longer than the others. Anterior antennae much longer than the body, reaching when reflexed beyond the extremities of the tail setae. The two apical antennal setae bear long hairs on the outer margins. The teeth of the mandibles are abnormally short and blunt. The basal joint of the palp is distorted, its distal end dilated into a prominent marginal nodule. The mouth organs and natatory feet are of the usual type; the basal joint of the fifth pair is serrated on its inner margin, the three or four distal spines slightly separated from the rest, very prominent, and much stronger in build.

The only gatherings in which this species occurred were from Stations 13 and 18—Lusitania Bay, tow-net all night, 2 fathoms; and off Maria Island, Tasmania, Station 2. Many specimens were found.

Though the marginal spines of the fifth feet are to some considerable extent different from those of *C. propinquus*, they scarcely form in themselves sufficient basis for a distinct species; but the very well-marked spinous extremity of the metasome, together with the characters of the mandibles and anterior antennae, seem to preclude a reference to *C. propinquus*, the only closely-allied species.

4. *CALANUS TONSUS* *Brady*.

*Calanus tonsus* Brady, 1883, p. 34, plate IV, figs. 8, 9.

The description and figures of this species given in the "Challenger" report are scarcely sufficient for accurate diagnosis, but on reference to actual specimens from one of the "Challenger" gatherings, I think that in many of the Antarctic collections there



are examples which may fairly be referred to the same species. They are at once distinguishable from *C. finmarchicus* and *C. propinquus* by the absence of spinous armature on the basiopodites of the fifth pair of feet. I have noticed also that in some cases both branches of the fifth pair are only bi-articulate, and I find a similar state of things in some of the "Challenger" specimens—possibly a character of immaturity. But since the foregoing paragraph was written I have received from my old friend and pupil, Miss Marie V. Lebour, an extremely interesting paper on the life history of *Calanus finmarchicus*, which entirely confirms my suspicions of immaturity of the bi-articulate fifth pair of feet. The research on the development of this *Calanus* was begun by Mr. L. R. Crawshay in the Plymouth Laboratory, and completed by Miss Lebour after the original author had left for the war. It embraces a complete account of the development of all the limbs and appendages from the nauplius stage onwards, and finally sets at rest any doubt as to the meaning of the bi-articulate fifth foot.\* The form described by Dr. Giesbrecht in his "Belgica" report, under the specific name *acutus*, may perhaps belong to the present species. The stations in which *C. tonsus* occurred are as follows:—

Stations 1, 2, 7, 8, 9, 12.

*Genus DIARTHROPUS gen. nov.*

Four pairs of feet in the female, five in the male; exopodite and endopodite uniformly bi-articulate, except as to the fifth pair of the male, both branches of which are one-jointed. Abdomen of the male three-jointed; of the female two-jointed.

*DIARTHROPUS TORTICORNIS sp. nov.*

(Plate VI, figs. 11–19.)

Length, 1.6 mm. Anterior antennæ twenty-four jointed, stout, almost without marginal setæ, except the three terminal joints, each of which bears a long hair. The antennæ, in all the full-grown specimens which I have seen, are bent so as to form a sub-circular loop, the apical joints coming almost in contact with the base of the limb. There are two frontal tentacular filaments. Mandibular palp small, consisting of a rather bulky base from which arise two short branches, of one and two joints respectively. Both branches of the first four pairs of feet are bi-articulate; those of the fifth pair in the male consist of one joint only.

Only few specimens of this species were found, but among the profusion of small fry, from which they are not readily distinguishable, doubtless more are to be detected by careful search. The only localities in which they were found are Station 2, off Maria Island, Tasmania, and Station 6, off Macquarie Island.

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\*Stages in the Life History of *Calanus finmarchicus* (Gunnerus). Reared by Mr. L. R. Crawshay in the Plymouth Laboratory, by Marie V. Lebour, M.Sc.

*Family* EUCALANIDÆ.*Genus* RHINCALANUS Dana, 1852.

## 1. RHINCALANUS GIGAS Brady.

(Plate I.)

*Rhincalanus gigas* Brady, 1883, p. 42, plate VIII, figs. 1-11.*Rhincalanus nasutus* Giesbrecht, 1893, p. 152, plates 3, 9, 12, 35.,, *grandis* Giesbrecht, 1902, p. 18, Taf. 1.

There are no points of difference, so far as appears from the published descriptions and drawings, between the species named above. The feet of the fifth pair in the female (Plate I., fig. 7) are quite characteristic, and, so far as I know, are unlike those of any other species.

Drawings of some of the more interesting details of the male animal are here given. The head and rostral filaments are rather deeply pigmented, and in one of the specimens there is a circular black pigment spot in the median line at the back of the head. The proximal joints of the anterior antennæ—at least seven or eight of them—bear club-shaped sensory setæ as well as fascicles of branched and simple hairs. The outer branch of the posterior antennæ is eight-jointed, nodose, and is much the shorter of the two branches. The foot of the right side in the fifth pair is simple, three-jointed, with a very long falciform apical claw near the base of which are two or three short spine-like setæ; the foot of the left side consists of a stout basal joint, from which spring a bi-articulate endopodite and a single-jointed exopodite, both of which are finely setiferous; the abdomen is 4-articulate.

*R. gigas* occurred plentifully in gatherings from the following Stations:—

7, 8, 9, 13, 14, 16.

Three or four specimens of more than the usual size were also found washed up on a sandy beach after a storm at Macquarie Island.

## 2. RHINCALANUS CORNUTUS Dana.

*Rhincalanus cornutus* Dana, 1852, p. 1083, plate 77, figs. 2-a-d.

,, Brady, 1883 p. 41, plate VII, figs. 1-10.

,, Giesbrecht 1893, p. 153, plates XII and XXXV.

Two examples only of this species were observed, from Stations 14 and 16.

*Family* PARACALANIDÆ.*Genus* PARACALANUS Boeck, 1864.

## 1. PARACALANUS PARVUS Claus.

*Calanus parvus* Claus, 1863, p. 173, plate XXVI, figs. 10-14, plate XXVII,—figs. 1-4.*Paracalanus parvus*, G. O. Sars, 1901, p. 17, plates VIII and IX.

Fairly common at Stations 8, 13, and 18, and almost the only recognisable species a gathering from Carnley Harbour, in the Auckland Islands—Station 17.



2. PARACALANUS MARIE *sp. nov.*

(Plate I, figs. 9–14.)

*Male*.—This species, of which two males and two females only have been observed, differs from the foregoing in several rather important points. The proportionate lengths of the abdominal segments, which in *P. Mariæ* are as follows:—  
 $\frac{1, 2, 3, 4.}{1, 1\frac{1}{2}, 1, 3.}$  The fourth segment, however, shows an apparently incomplete line of division. The basal joint of the posterior maxilliped is produced in a mamilliform fashion and is covered with three rather large setæ, more conspicuously than in *P. parvus*. The third and fourth pairs of swimming feet have the distal portion of the last joint of the exopodite armed with a series of very minute spines; the other swimming feet are entirely devoid of spines. The feet of the fifth pair are similar to those of the male *P. parvus*, except that the joints of the longer branch are nearly equal in length instead of being very unequal, as in *P. parvus*.\* The specimens on which this description is based were taken at Station 2—off Maria Island, Tasmania.

*Family* PSEUDOCALANIDÆ.*Genus* CLAUSOCALANUS *Giesbrecht*, 1888.CLAUSOCALANUS FURCATUS (*Brady*).

*Drepanopus furcatus* Brady, 1883, p. 77, plate IV, figs. 1, 2; plate XXIV, figs. 12–15.

This species, which seems to me indistinguishable from *C. arcuicornis* Giesbr., was found in two nettings from Stations 2, 5, 8 and 18. I find it impracticable on the strength merely of the segmental lengths of the abdomen and furca, which are chiefly relied upon by Dr. Giesbrecht and Andrew Scott, to diagnose the two species with any reasonable accuracy.

*Genus* SPINOCALANUS *Giesbrecht*, 1888.SPINOCALANUS GIESBRECHTI *sp. nov.*

(Plate VIII, figs. 21–25.)

*Male*.—Anterior antennæ comparatively short, reaching to the level of the second pair of natatory feet; endopodites of the third and fourth pairs of feet in the male armed with spines as in the type species, the exopodites bearing on the distal segment three sets of very minute spines, about three or four spines in each group; fifth pair of feet imperfectly seen, the foot of each side made up apparently of three linear joints with three terminal setæ; abdomen composed of four nearly equal segments.

*Female*.—Abdomen of three segments, third more than equal in length to the combined anterior segments; fifth pair of feet rudimentary, composed of two or three stout joints with a minute inner branch.

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\*The fifth pair of the female similar to those of *P. parvus*.



There seems little reason to doubt that the two specimens on which the foregoing description is founded represent the two sexes of the same species; that which I take to be the female, possesses however, no spinous armature on any of the limbs, and the fifth pair of feet may perhaps be immature.

The species here described I very doubtfully refer to the genus *Spinocalanus* of Giesbrecht. The fifth pair of feet, according to Sars, are absent in the female, whereas in the present species they are present in a very rudimentary form, unless indeed, the figure here given be taken to be an immature male. Moreover, the third and fourth pairs of feet of *S. Giesbrechti* are by no means so profusely spiniferous as in the typical form, agreeing more closely with those of *Racovitzanus* Giesbrecht.

The specimens were taken by the tow-net at sunrise, Station 5, off Macquarie Island.

*Genus* STREPTOCALANUS *gen. nov.*

Anterior antennæ 23 jointed not geniculated, the internodes of most of the median joints constricted, the joints about as long as broad, except the eighth which is much longer; mandibles well developed as regards the palp, but wanting as to the cutting blade which is altogether absent or remains as a mere nodule; fifth pair of feet in the male two branched, the branches simple but very unequal in length.

STREPTOCALANUS TYPICUS *sp. nov.*

(Plate V, figs. 1-9.)

*Pseudocalanus pygmaeus*, Mrázek, p. 508, Plate V, figs. 2-7, 7a.

The peculiar curve of the fifth foot when seen laterally, together with the conspicuously beaded character of the anterior antennæ are sufficient to indicate this species at a glance. The biting plate of the mandible seems to be usually absent, but in some specimens there is an amorphous process which represents that part of the limb; the exopodites of the swimming feet are all three-jointed, the endopodites of the first pair one-jointed (incompletely divided), the second pair two-, the third and fourth three-jointed. The fifth pair is two-branched, the larger right branch made up of five digitiform subovate segments, the smaller branch of two similar segments. Outer branch of the posterior antenna much longer than the inner. Length of male 1.075 mm. Female unknown. Found very sparingly in Stations 3, 7, 8, 10, 11.

The swimming feet resemble rather closely those of *Spinocalanus*, but are altogether without spines, and in other respects there is little in common between the two. But it is evident that the species referred doubtfully by Dr. Mrázek (*loc. cit.*) to *Pseudocalanus pygmaeus* G. O. Sars, is closely allied to the *Streptocalanus* here described.

The admirable figures given in "Arktische Copepoden," leave little or no doubt on the matter. Perhaps I may be forgiven if I suggest that the figure of the mandible of "*Spinocalanus Schaudinni*" may have been accidentally transferred from "*Pseudocalanus pygmaeus*." It is wholly unlike the mandible of a typical *Spinocalanus*, and might very well stand for that of *Streptocalanus*.

*Family* AETIDEIDÆ.*Genus* AETIDEUS *Brady*, 1883.AETIDEUS BRADYI *A. Scott*.

(Plate VIII, figs. 19, 20.)

*Aetideus Bradyi* *A. Scott*, 1909, p. 38, plate 5, figs. 1-12.

A single specimen agreeing in all respects with the species described by Mr. Andrew Scott, was found in a tow-net gathering taken off Macquarie Island at sunrise. Station 5.

AETIDEUS ARMATUS *Boeck*.

Taken in gathering from off Macquarie Island. Stations 1 and 4.

Specimens which I refer with some little doubt to this species, seem to agree entirely with the descriptions and figures given by Professor G. O. Sars.

The Macquarie specimens are very few in number and the mutilated condition of most of them renders the identification difficult.

*Genus* GAETANUS *Giesbrecht*, 1888.GAETANUS ANTARCTICUS *sp. nov.*

(Plate III, figs. 1-6 and fig. 19.)

*Female*.—Apparently more closely related to *G. armiger* than to any other species, but larger. The metasome is much more robust and the spinous processes of the posterior segment are not nearly so well developed; rostrum small and inconspicuous; abdomen short and stout, the first (genital) segment equal in length to the following three; median joint of external ramus of posterior antenna large, and bearing a conspicuous marginal protuberance; marginal processes of the posterior maxillipeds strongly developed, that of the right side forming a sharply pointed dagger-like hook, that of the left side smaller and blunt; apical spines of the swimming feet with very strong sharp marginal teeth.

The mamilliform protuberances of the posterior antennæ and the lamellar outgrowths of the posterior maxillipeds vary very considerably in character, and, as has been remarked by Mr. Andrew Scott, as regards the maxillipeds, may perhaps be more than usually subject to distortion by pressure or other mechanical causes. Length 5 mm. Found only at Stations 2, 10 and 14, sparingly.

*Genus* GAIDIUS *Giesbrecht*, 1895.GAIDIUS GLACIALIS *sp. nov.*

(Plate VII, figs. 12-18.)

Length of female 2.85 mm. Body moderately robust, metasome seen dorsally thrice as long as broad, last segment truncated, with two short sharp spines at the



angles; rostrum short and undivided; abdomen composed of four nearly equal segments, scarcely one-fourth as long as the metasome; furcal plates about as long as the last abdominal segment. Inner branch of the posterior antenna shorter than the outer branch; which bears on the inner side of its first joint a rather conspicuous hook-like process. The feet consist on each side of a stout basal joint at the free end of which are attached an endopodite and exopodite, each of a single joint, the outer about three times as long as the inner, dagger-like with three small apical spines; the inner branch small and bulbous in shape.—One specimen only seen, from 100 fathoms. Station 14.

The fifth pair of feet agree very closely with figures of the same limb of *Aetideus armiger* given by Dr. T. Scott in his paper on Entomostraca from the Gulf of Guinea, but otherwise there seems to be little or no similarity between the two species. This single specimen was very imperfect, all the swimming feet being fragmentary; possibly it may represent an immature state of a *Gaetanus*.

*Genus* EUCHIRELLA *Giesbrecht, 1888.*

EUCHIRELLA PLUMOSA *sp. nov.*

(Plate II, figs. 14–19.)

As regards the basal spines of the fourth feet this species is somewhat like *E. maxima*, Wolfenden, as figured by Mr. Andrew Scott, but has two conical processes instead of the single one of *E. maxima*; the abdomen of the female is also quite dissimilar in the two species, being in *E. plumosa* quite without marginal serratures. The apical spines of the swimming feet are longer than the last joint of the exopodite, very strongly toothed on the outer and densely ciliated on the distal half of the inner margin; the basal joints of the first pair of feet bear dense fascicles of setæ internally; the furcal setæ and those of the several appendages are finely plumose. The locality of the specimens has been lost (Station 5.).

EUCHIRELLA TUMIDA *sp. nov.*

(Plate III, figs. 7–12.)

Length of female, 2.2 mm. Branches of the fifth pair of feet in the male of equal length, apical joint of the exopodite curved and crenulated on its outer margin; apical spines of the swimming feet barely as long as the last joint of the exopodite, the outer margins finely pectinated. The female specimen here figured was very much damaged, and the feet of the fourth pair could not be found. Taken at Stations 13 and 8.

*Genus* PARAEUCHÆTA *A. Scott, 1909.*

This genus was proposed by A. Scott to comprise those Euchætiform species which differ from the typical form in having the terminal setæ of the anterior maxillipeds minutely pectinated in lieu of bearing long bristles, the males also being slightly different as to the fifth pair of feet.



PARAEUCHÆTA ANTARCTICA *Giesbrecht*.*Euchæta antarctica* Giesbrecht, 1902, plate III, figs. 1–5.

Specimens which may fairly be referred to this species were taken at Stations 2, 7, 9, 10, 11, 16, 19; but the differences between this and *Euchæta austrina*, described also by Dr. Giesbrecht in the same paper, are so slight as to seem almost negligible. Both *E. austrina* and *E. antarctica* are referable to the genus *Paraeuchæta* as defined by Mr. A. Scott.

PARAEUCHÆTA PLUMIFERA *sp. nov.*

(Plate XIV, figs. 7–11.)

Only one imperfect specimen of this species was found, but the profusely plumose character of the limbs and appendages, except the anterior antennæ, which are of the usual *Euchæta* type, seems to separate it from any hitherto described species. It was found in the proceeds of the tow-net from Station 9, at a depth of 100 fathoms. Another specimen, which may possibly belong to the same species, occurred in the gathering from Station 14, but is not sufficiently developed to name with certainty.

Genus EUCHÆTOPSIS *nov. gen.*

Like *Euchæta*, except that the abdomen (of the female) consists of only two segments, and that both branches of the natatory feet are of one joint only, except in the fourth pair, the exopodite of which is bi-articulate.

EUCHÆTOPSIS HASWELLI *sp. nov.*

(Plate IX, figs. 1–7.)

*Female*.—Length 2.5 mm.; body somewhat compressed, urosome, including the caudal laminæ, one-third the length of the metasome. Rostrum short and sharp, only slightly prominent, antennæ reaching to the hinder extremity of the animal, and bearing long, slender setæ, as in the typical *Euchæta*. Second segment of the abdomen twice as long as the first; caudal laminæ about half as long as the preceding segments. Second seta of the tail very long, as in *Euchæta*. Exopodite of the first foot slightly sinuated, its outer margin with a small angular prominence which bears a rigid spine-like seta; terminal spines of the exopodites long, slender, and finely pectinated. The apical setæ of the first pair of maxillipeds are very finely and closely ciliated, as described by Mr. Andrew Scott in the case of *Paraeuchæta*.

A few specimens of *Euchætopsis* occurred in the tow-net collection from Stations 6, 7 and 11.

It seems possible that the specimens here referred to a new genus—*Euchætopsis*—may perhaps represent only a stage of development of *Euchæta*, or some allied form, but in the absence of certain knowledge as to this matter I have proposed an altogether new generic name.

*Genus* PSEUDOÖTHRIX *nov. gen.*

(Oothrix Farran, 1905.)

This proposed new genus differs from *Oothrix* as described by Farran in having swimming feet with bi-articulate exopodites in the absence of "sausage-shaped sensory filaments" on the first maxillipedes, and in the bifurcate fifth pair of feet, with rudimentary exopodite and endopodite.

PSEUDOÖTHRIX ANATINA *sp. nov.*

(Plate VII, figs. 1-11.)

*Female* (?).—Length 1.55 mm. Anterior antennæ jointed, reaching to third thoracic segment; rostrum short and thick, duck-bill shaped. Outer branch of the posterior antenna slightly longer than the internal. First pair of maxillipeds short and stout, with three long distal setæ arising from thick, digitiform, much-swollen bases; posterior maxillipeds of the usual type; exopodites of the first pair of feet bi-articulate endopodites of one joint only; the second, third, and fourth pairs of feet have both endopodites and exopodites bi-articulate, the exopodite much the longer of the two; terminal spines as long as the foregoing joint, with finely pectinated outer margin; fifth pair of feet very short and stout, each composed of a thick bi-articulate base, from which spring two very short subovate digits, representing the exopodite and endopodite. Four individuals of this species were observed, one or two of them very deeply pigmented. They were taken at Station 11, at a depth of 100 fathoms; one specimen from Station 9.

These specimens agree in most respects so completely with Farran's description of the genus *Oothrix* that I am disposed to doubt whether they might not properly be referred to that genus. The differences, however, as to the fifth pair of feet are remarkable, as also the jointing of the various swimming feet. Moreover, the "sausage-shaped sensory filaments" of the first maxillipeds, on which Dr. Farran lays special stress, are not present in the Antarctic specimens, unless it may be supposed that they are represented by the much-dilated bases of the terminal hairs. It is noteworthy that Farran's description rests upon only one undoubted specimen, and it seems not at all unlikely that this may have suffered loss of hairs originally attached to the sausage-shaped structures. The size of *Oothrix bidentata* is given as 3 mm., more than twice that of the present species.

*Genus* PLAGIOPUS *nov. gen.*

Anterior antennæ having twenty joints, long, slender, and very flexuous. Exopodites of the first four feet bi-articulate; endopodites uni-articulate, that of the second pair deeply and angularly emarginate, as in the second exopodite of *Undina vulgaris*; fifth pair simple, each branch composed of a single joint.

PLAGIOPUS AUSTRALIS *sp. nov.*

(Plate VIII, figs. 1-9.)

*Female*.—Length 1.3 mm. Anterior antennæ indistinctly jointed at the base, terminal joints long and slender, with a distinct bend between the fourteenth and



fifteenth, and fifteenth and sixteenth joints, but no perceptible geniculated hingement. Anterior maxilliped short and stout, with five setiferous digits on the anterior margin; posterior maxilliped five-jointed, the terminal lash composed of only three joints; endopodite of the second pair of feet having a deeply excavated fossa on the inner margin, which is protected by a spine both above and below; terminal spines of the exopodites linear, long and slender, very finely pectinated on the outer edge. Fifth pair of feet consisting of a simple wedge-shaped uni-articulate (or very indistinctly divided) branch on each side, very broad at the base, much narrowed distally, and bearing at the apex two short spines. Abdomen of two segments, the second twice as long as the first and rather tumid; furcal plates twice as long as broad. *Male* unknown.

Two specimens have been detected, from Stations 11 and 12 respectively, depth 100 fathoms; also one from Station 1, off Macquarie Island, 2 fathoms, and others from Station 5.

*Family* SCOLECITHRICIDÆ.

*Genus* SCOLECITHRIX *Brady*, 1883.

SCOLECITHRIX RÖMERI *Mrázek*

(Plate II, figs. 8–13).

*Scolecithrix Römeri* Mrázek, 1902, p. 513, plate VI and text, figs. 10–12.

„ *glacialis* Giesbrecht, 1902, p. 25, plate IV, figs. 1–7.

The specimens here figured are undoubtedly identical with the species named by Mrázek *Scolecithrix Römeri*. It seems doubtful, however, whether the species can be rightly referred to that genus. The group of vermiform hairs on the posterior maxillipeds, which are faintly indicated in Mrázek's figures, are barely perceptible in the Antarctic specimens, and are scarcely recognisable as the structures from which the generic name of the "Challenger" specimens was derived. But the generic reference may stand, at any rate provisionally. The female only is described and figured by Dr. Giesbrecht, and is evidently identical with Mrázek's species. The date of publication is the same in both cases—1902. The Mawson expedition specimens are from Stations 1, 6, 8, 11 and 13.

*Genus* RACOVITZANUS *Giesbrecht*, 1902.

RACOVITZANUS ANTARCTICUS *Giesbrecht*.

*Racovitzanus antarcticus* Giesbrecht, 1902, p. 26, plate IV, figs. 8–13; plate V, figs. 1–5.

(Plate III, figs. 13–18.)

Two or three specimens found at a depth of 100 fathoms. Stations 9 and 11.



*Family* STEPHIDÆ.*Genus* STEPHOS *Scott*, 1892.STEPHOS LONGIPES *Giesbrecht*.

(Plate II, figs. 1-7.)

*Stephos longipes* *Giesbrecht*, 1902, p. 20, plate II, figs. 6-14.

Two specimens of *S. longipes* occurred in the gathering from Station 8. Judging from Dr. *Giesbrecht*'s illustrations one of these would seem to belong to an immature male, the other possibly to an adult female (fig. 1). There is a short and stout bifid rostrum, the posterior maxillipeds are very much elongated and slender, the swimming feet agree accurately with those limbs as figured by Dr. *Giesbrecht*.

STEPHOS SIMILLIMUS *sp. nov.*

(Plate IX, figs. 12-18.)

*Female*.—Length 1.2 mm. This species, of which several examples occurred in the tow-net gathering from Station 6, agrees in most respects with the description and figures of *S. lamellatus* given by Professor G. O. Sars in vol. 5 of his work on the Crustacea of Norway, the most important distinctive characters belonging to the third, fourth and fifth pairs of feet. The basal joint of the fourth pair has three spine-like hairs on its inner margin and one or two similar hairs arising from a not very clearly defined laminar expansion on its front surface; the terminal joint of the third exopodite has on its anterior surface three crescentic groups of very minute spines; the fifth pair is simple, each branch consisting of three linear joints without spinules or marginal cilia. Posterior maxillipeds long and slender, the internodes scarcely at all constricted. Of the *male* I have seen no examples.

## HETERARTHANDRIA.

*Family* CENTROPAGIDÆ.*Genus* BOECKELLA *de Guerne and Richard*.BOECKELLA BREVICAUDATA *Brady*.

(Plate V, figs. 10-18).

*Centropages brevicaudatus* *Brady*, Ann. and Mag. Nat. Hist., ser. 4, September, 1875; vol. XVI, p. 162, and Phil. Trans, vol. 168, p. 215, plate XII, figs. 11-19.

*Boeckella vexillifera* *Ekman*, 1905, p. 16, plate I, figs. 7-12

*Female*.—Length 1.75 mm. Seen dorsally the metasome is of nearly equal width throughout, the width equal to about one-third of the entire length, the hinder part expanded so as to form two large acutely pointed lateral wings, the head very wide

in front, almost subtruncate; abdomen very short, 3-segmented, the first (genital) segment much the largest. Anterior antennæ 24-jointed, the joints of nearly equal size, but increasing somewhat in length beyond the middle, and reaching nearly to the hinder extremity of the metasome. Furcal laminae as long as the last abdominal segment, each bearing five short setæ. The ovarian masses are very large, containing a variable number of eggs—5 to 20. Posterior maxillipeds short and stout, with two long basal joints and a terminal portion of four small joints. Exopodites and endopodites of all the swimming feet three-jointed—the endopodite of the first pair indistinctly; middle joint of exopodite of fifth pair produced internally into a long spine, which is strongly pectinated on the distal margin.

*Male*.—Right anterior antenna of the male strongly geniculated; the penultimate joint giving attachment marginally to the small terminal joint. Fifth pair of feet strongly clawed, that of the right side without an endopodite, that of the left side with a small 3-jointed endopodite. This was the principal constituent of a gathering from Macquarie Island—Station 3—and from one marked C. 17; single specimens were also found in the proceeds of Station 11, 100 fathoms; and from the night tow-net off Macquarie Island, but these latter were doubtless interlopers from some littoral locality.

The species was first described (*loc. cit.*) from specimens taken in the fresh-water lakes of Kerguelen Island, and was assigned erroneously to the genus *Centropages* under the impression that the specimens were oceanic. Several allied forms more recently discovered in widely different areas have been ascribed to the same or newly-named genera, but all seem to be inhabitants of fresh or brackish water. Dr. Ekman's specimens were from fresh water in the Falkland Islands and Tierra del Fuego.

*Family* METRIDIIDÆ.

*Genus* METRIDIA Boeck, 1864.

METRIDIA GERLACHEI Giesbrecht.

(Plate IV, figs. 19–23.)

*Metridia Gerlachei* Giesbrecht, 1902, p. 27, plate 5, figs. 6–14.

The characters of this species, based chiefly on the comparative lengths of the abdominal segments and on the fifth pairs of feet in both sexes, are practically identical with those of *Metridia longa*, as given by Dr. Giesbrecht in his great work on the Copepoda of the Gulf of Naples. I give here figures of some of the more important parts of *M. Gerlachei*, drawn from Antarctic specimens. The species occurred commonly in gatherings from Stations 2, 4, 5, 7, 8, 9, 10, 11, 16.

METRIDIA ANDRÆANA *sp. nov.*

(Plate IX, figs. 8–11.)

A few specimens which I was at first disposed to refer to *M. Boeckii*, Giesbrecht, I now take to belong to a different species hitherto undescribed. The fifth feet in the



female are exactly like those of *Boeckii* as figured by Dr. Giesbrecht, but the segmentation of the abdomen is in both sexes entirely distinct, if I am right in assigning the two forms here figured to the two sexes of one and the same species. The fifth pair in the male are more simple than in the recognised *Metridia*, and indeed do not much differ from those of the female except as to size. Abdomen in both sexes four-jointed, the first three segments nearly equal in size; fourth nearly twice as long as either of the preceding segments; caudal laminae about twice as long as broad, more than half as long as the last abdominal segment. The specific name *Andræana* is adopted in recognition of the assiduous study which Mr. Andrew Scott has for many years devoted to the Copepoda, both British and foreign.

The specimens here noted occurred in gatherings from Stations 6, 7, 8 and 11.

*METRIDIA TRISPINOSA* *sp. nov.*

(Plate XIV, figs. 12-17.)

*Male*.—Length 3 mm. (*circa*.) The anterior antennæ are very slender and almost destitute of marginal setæ, except towards the base; the basal joints have not the rugose aspect which characterises most species of this genus, but the second, fourth and sixth segments have each a sharp spine at the distal extremity; the hooks at the base of the second endopodite are strong and well developed; the first (genital) segment of the abdomen is equal in length to the combined length of the two following segments, but shows an imperfect division in the middle, the last segment has two sharp backwardly-directed spines on its anterior surface; furcal laminae three times as long as broad. Fifth pair of feet in the male very stout, the basal portion three-jointed, with prehensile apical processes; (mutilated in these specimens).

Two specimens only have been seen, both of them imperfect—taken at Stations 10 and 11.

*Genus* *PLEUROMAMMA* Giesbrecht, 1898.

*PLEUROMAMMA WOLFENDENI* *sp. nov.*

(Plate VIII, figs. 10-18.)

*Female*.—Basal joints of the anterior antennæ strongly spined marginally; exopodites of all the swimming feet bi-articulate, endopodites one-jointed; endopodites of the second pair slightly emarginate at the base, with a small subadjacent spine; first joint of the fourth exopodite much produced externally, forming a prominent hook-like projection which ends in a sharp spine; fifth pair of feet somewhat like those of *P. gracile*, the terminal joints not cleft but bearing irregular fascicles of short bristles; abdomen stout, composed of three segments, the third equal in length to the combined anterior segments; "eye spot" situated on the right side of the thorax, circular, composed of three coalescent pigment cells. Apical spines of the exopodites lancet shaped, scarcely half as long as the last joint.



Two specimens only of this species were seen; both of them taken in the tow-net at a depth of two fathoms off Macquarie Island.

*Family* HETERORHABDIDÆ.

*Genus* HETERORHABDUS Giesbrecht, 1898.

HETERORHABDUS AUSTRINUS *Giesbrecht*.

(Plate IV, figs. 1-9.)

*Heterorhabdus austrinus* Giesbrecht, 1902, p. 28, Plate 6, figs. 1-9.

This species is closely allied to *H. Clausi* Giesbrecht, the chief difference being the absence of a hook-like spine on the first joint of the fifth exopodite of the female; the fifth foot of the male is more robust and massive than that of *H. Clausi*—especially as to the terminal claws, but is otherwise similar. *H. norvegica* Boeck, as figured by G. O. Sars, differs only very slightly from the other two.

*H. austrinus* was taken sparingly in 100 fathoms—Stations 9, 11, 12, and one specimen only at Station 1.

HETERORHABDUS FARRANI *sp. nov.*

(Plate IV, figs. 10-18.)

*H. Farrani* may be distinguished from the foregoing species by the serrated posterior margins of the abdominal segments, by the distichously spinous character of the two median tail setæ, and by the absence of the usual long falciform spine of the basal joint of the posterior maxilliped. The fifth pair of feet in the male is comparatively short and stout and its apical joints do not bear the long curved spines generally characteristic of the genus. The fifth pair in the female is much stouter than in *H. austrinus*, and the terminal spine of the exopodite is larger. *H. Farrani* was found only in 100 fathoms at Stations 9 and 11. Not more than two or three specimens were seen.

HETERORHABDUS NIGROINCTUS *sp. nov.*

(Plate VI, figs. 1-8.)

I refer this doubtfully to the genus *Heterorhabdus*, with which it appears to agree in all respects except in the absence of the peculiar excurrent tooth of the mandibles which is generally so conspicuous in that genus. The anterior antenna of the right side of the only specimen seen was imperfect, and may perhaps have a geniculating joint. The maxilla has the well-marked distinctive characters of the genus; so also has the fifth pair of feet. Length, 5 mm.

The long setæ with which the mouth-organ and limbs are clothed are mostly plumose and deeply tinged with black pigment. One specimen only was seen in the gathering from Station 9; depth, 100 fathoms.

*Family* AUGAPTILIDÆ.*Genus* HALOPTILUS *Giesbrecht*, 1898.HALOPTILUS OCELLATUS *Wolfenden*.

(Plate VI, figs. 9, 10.)

*Haloptilus ocellatus* Wolfenden, 1908, p. 42, Plate 3, figs. 1, 2.

The long and very sharp median frontal spine and the very conspicuous ocellar patches sufficiently distinguish this species from any other. Several specimens occurred in the gatherings of the Mawson Expedition, at Stations 4 and 8, and three from Station 7.

The very remarkable transparency of the animals belonging to this genus, together with the elongated aculeate or hooked rostrum sufficiently distinguish it from all others.

*Family* ACARTIIDÆ.*Genus* ACARTIA *Dana*, 1846.ACARTIA ENSIFERA *Brady*.

(Plate XIV, figs. 1-6.)

*Acartia ensifera* Brady, 1889, p. 33, Plate IX, figs. 8-15.

Two imperfect specimens—male and female—were found in the tow-net gathering from Station 17. Some of the limbs were apparently distorted, and though they do not altogether agree with those of the New Zealand specimens here referred to, one would scarcely be justified in assigning to them a new specific name.

## AMPHARTHRODRIA.

*Family* OITHONIDÆ.*Genus* OITHONA *Baird*, 1843.OITHONA FRIGIDA *Giesbrecht*.

(Plate X, figs. 18-20.)

*Oithona frigida* Giesbrecht 1902, p. 29, Plate VI, figs. 10-16.

*Female*.—Length 1.3 mm. Seen dorsally, the anterior portion of the body is compressed, ovate, with a short, acute rostrum; abdomen very long and slender, nearly as long as the cephalothorax; anterior antennæ reaching as far as the middle of the abdomen. The appendages of the mouth and the swimming feet agree, so far as I have been able to make them out, with Giesbrecht's descriptions.

The Stations at which it occurred are 2, 5 and 6.

Most of the gatherings contained specimens belonging to the genus *Oithona*, but I am unable certainly to identify them except in the cases mentioned above. Most of the specimens may, I think, be referred to *O. frigida*.

*Family* LONGIPEDIIDÆ.

*Genus* LONGIPEDIA *Claus*, 1863.

LONGIPEDIA SCOTTI *G. O. Sars*.

*Longipedia Scotti*, *G. O. Sars*, 1903, vol. v, p. 11, Plate 5.

A single specimen agreeing in every respect with Professor Sars' description and figures of *L. Scotti* occurred in the tow-net gathering from Station 15.

*Family* ECTINOSOMIDÆ.

*Genus* MICROSETELLA *Brady and Robertson*, 1873.

MICROSETELLA ATLANTICA *B. & R.*

(Plate XIII, figs. 9–12.)

*Microsetella atlantica*, *B. & R.*, 1873, p. 130, Plate IX, figs. 11–16.

Specimens which are indistinguishable from the typical *M. atlantica* were found among the tow-net proceeds of Stations 1, 7 and 8.

*M. atlantica*, however, is considered by Professor Sars to be identical with *Setella norvegica* Boeck, and the earlier specific name has therefore been adopted by him. If this view is accepted the species must of course be named *Microsetella norvegica*. I give in Plate 13 figures of some details from Antarctic specimens, of which females only have been seen—length 0.47 mm. Length stated by Professor Sars, 0.46. Length originally given for *M. atlantica*,  $\frac{1}{60}$  of an inch.

*Family* HARPACTICIDÆ.

*Genus* HARPACTICUS *Milne-Edwards*, 1838.

HARPACTICUS PULVINATUS *Brady*.

*Harpacticus pulvinatus* *Brady*, 1910, p. 550, fig. 39.

A single specimen which seems to be referable to this species was found in the tow-net gathering from Station 5, but was so profusely infested with an infusorian parasite that it was impossible so make out accurately all the structural details.

*Family* THALESTRIDÆ.

*Genus* DACTYLOPUSIA *Norman*, 1903.

DACTYLOPUSIA BREVICORNIS (*Claus*).

One specimen of this well-known northern species occurred in the tow-netting from Station 1, and a few in that from Station 7.



*Genus MAWSONELLA nov. gen.*

In outward appearance like *Dactylopusia* or other *Thalestridæ*. Anterior antennæ eight-jointed (?), endopodite of the first pair of feet longer than the exopodite, three-jointed, exopodite of two joints; both branches of the three following pairs two-jointed; fifth pair foliaceous, minute and stunted. Mouth organs as in normal *Thalestridæ*.

MAWSONELLA TYPICA, *sp. nov.*

(Plate XIII, figs. 13-20.)

*Female*.—Anterior antennæ eight-jointed; the first three joints much stouter than the following ones; posterior antennæ short and stout, the proximal joint undivided, outer ramus small, bi-articulate; endopodite of the first pair of feet elongated, three-jointed, the first joint short and stout, middle joint long and bearing a single marginal seta at its apex, third joint half as long as the preceding one, and armed at the extremity with two rather stout setæ; exopodite scarcely more than half as long as the endopodite, its marginal spines rather long and slender, external margin ciliated, except on the distal half of the second joint; second, third and fourth pairs with both branches bi-articulate, distal joint much longer than the proximal one; external margins of the exopodites spinous and ciliated as in the first foot; fifth pair very short, the two laminae, subrotund, equal in length and breadth, the external branch with four short setæ, the internal with only one seta; furcal joints of the abdomen extremely short, scarcely as long as broad, only about one fourth as long as the last abdominal segment. Only one specimen of this species was found—taken at Station 7, “45 fathoms in pack-ice.” Its nearest allies would seem to be *Tydmannella*, A. Scott, and *Dactypodella*, G. O. Sars, but the structure of the swimming feet alone suffices to distinguish it. The anterior antenna as shown in the Plate is almost certainly imperfect—the apical joint being lost.

*Family IDYIDÆ.**Genus TISBE Lilljeborg, 1853.*TISBE TENUIMANA (*Giesbrecht*).

*Idya tenuimana* Giesbrecht, 1902, p. 38, Plate XI, figs. 8-13.

*Tisbe tenuimana* Brady, 1910, p. 560, Plate LIV, fig. 2, and Text fig. 47.

One specimen from Station 18.

Norman and Scott in their work on the “Crustacea of Devon and Cornwall,” point out that the generic name *Idya* instituted by Phillippi in 1843 is invalid, the name being preoccupied, and they revert to the term *Tisbe*, used by Lilljeborg in 1853.

*Genus MACHAIROPUS Brady, 1883.*MACHAIROPUS SARSI *Brady*.

(Plate XIII, figs 1-8.)

*Machairopus Sarsi* Brady, 1910, p. 558, Text fig. 46.

A few specimens—not more than three or four—of *Machairopus Sarsi* were found in the proceeds of Stations 1 and 18. The species was previously known only

from two examples taken at New Amsterdam, and described by me in the Report on the *Harpacticoidea* of the German South Pole Expedition. I have thought it desirable to give further figures of some of the more important structural details which I was able to examine more fully in the specimens here referred to. The only discrepancy of any moment is the absence of a secondary branch in the posterior antennæ, but this may very likely have been lost in the processes of collecting and preservation.

*MACHAIROPUS DIGITATUS* *Brady*.

*Machairopus digitatus* Brady, 1910, p. 559, Plate LVI, figs. 1-9.

A single specimen, doubtfully referable to this species, occurred in the tow-net gathering from Station 18.

*Family* DIOSACCIDÆ.

*Genus* AMPHIASCUS *G. O. Sars*, 1905.

AMPHIASCUS ELEGANS *sp. nov.*

(Plate X., figs. 1-12.)

Length 0.87 mm.

*Female*.—Body rather slender, the anterior portion scarcely broader than the posterior; cephalic segment about as long as the remaining four segments of the cephalothorax; rostrum very stout and prominent, reaching as far as the first two joints of the anterior antennæ. Urosome barely as long as the metasome, and scarcely at all tapering backwards; caudal rami irregularly quadrangular, dilated basally, about as broad as long. Anterior antennæ slender, eight-jointed, the first two joints much the largest, the terminal four jointed each about half as long as the proximal portion; the following formula indicates approximately the proportionate lengths of the joints; 1, 2, 3, 4, 5, 6, 7, 8,  $3\frac{1}{2}$ ,  $3\frac{1}{2}$ ,  $1\frac{1}{2}$ , 3,  $1\frac{1}{2}$ , 1, 1,  $1\frac{1}{2}$ ; posterior antenna stout, strongly spiniferous, middle joint of the outer branch very small; outer branch of the first pair of legs three-jointed, about half the length of the inner branch, the three joints equal in length; inner branch three-jointed, the median joint very short, distal joint more than twice as long and bearing two strong apical setæ. Last pair of legs foliaceous, the two laminae of nearly equal length, the outer one ovate, the inner sub-cuneate, tapering to the distal end, both branches bearing several marginal setæ.

*Male*.—Anterior antennæ geniculated and irregularly nodose as usual, the posterior maxilliped slender, elongated, rather strongly clawed, but almost destitute of setæ; endopodite of the second pair of feet much modified, the distal joint carrying two strong apical spines, the inner one long, the outer very short, also two long apical setæ, one of which is dilated at the base; fifth pair of legs short, the basal lamina broad, with a truncated and strongly ciliated distal extremity, the distal outer lamina small, broadly ovate, with five strong marginal setæ.

Taken at Stations 7 and 10 sparingly.



*AMPHIASCUS IGNOTUS* *sp. nov.*

(Plate X, figs. 13-17.)

*Male*.—Length, 0.9 mm. In general form much like the preceding species, the urosome somewhat more tumid; anterior antennæ more slender, with the median joints less swollen; the two terminal joints of the endopodite of the first foot are nearly alike in length, and the whole limb is rather profusely ciliated; feet of the fifth pair foliaceous, short, the outer and inner segments of nearly equal length, and bearing numerous long marginal setæ, the outer one broadly ovate, the inner subquadrate, with an irregularly truncate distal extremity which bears three long terminal setæ, its outer margin densely ciliated. One specimen only was seen; female unknown. Taken in the tow-net at 50 fathoms depth, Station 8.

*Genus* STENHELIA *Boeck, 1864.*STENHELIA (?) GLACIALIS *sp. nov.*

(Plate XII, figs. 9-14.)

*Female*.—Length 0.55 mm. Metasome and urosome nearly equal in length and thickness; anterior antennæ short and stout, seven-jointed, the four proximal joints much stouter than the distal ones; endopodite of the first pair of feet much longer than the exopodite, three-jointed, basal joint short and tumid, second joint nearly thrice as long, bearing a long seta and a few short ones on its internal margin, the distal joint small, with two long apical setæ; exopodite three-jointed; second, third and fourth pairs of feet having both branches three-jointed, the outer branch rather densely setose; fifth pair foliaceous, the two segments of nearly equal length; caudal laminæ short, and distant, about equal in length to the last abdominal segment.

One specimen from Macquarie Island, Station 3.

This species is referred with some doubt to the genus *Stenhelina*, some of the more characteristic structures being invisible in the dissected preparation.

*Family* LAOPHONTIDÆ.*Genus* LAOPHONTODES *Scott, 1894.*LAOPHONTODES LATISSIMUS *sp. nov.*

(Plate XI, figs. 1-9.)

*Female*.—Length 1.1 mm. Seen dorsally the cephalic segment is much wider than the following portion of the body, which tapers gradually backwards, the constrictions between the various segments being well marked but quite destitute of spines, the penultimate and antepenultimate segments protuberant laterally; the lateral margins of the last segment are produced backwards, forming sharply spined angles, the median portion also produced backwards, arcuate, and minutely crenulated;



furcal laminæ about twice as long as broad. Anterior antennæ five-jointed; posterior simple, bearing a stout apical claw and several short spine-like setæ; endopodite of the first foot much longer than the three-jointed exopodite; second, third and fourth pairs of feet with three-jointed exopodites and short, slender endopodites of one joint; fifth pair foliaceous, imperfectly divided into an outer and inner segment; maxillipeds and mandible normal. Male unknown.

Only two examples of this species have been seen, taken off Macquarie Island at Stations 1 and 5.

*LAOPHONTODES ANTARCTICUS sp. nov.*

(Plate XI, figs. 10–17.)

*Female*.—Length 0.87 mm. Seen laterally the abdomen is nearly equal in width to the cephalothorax, the dividing lines between the various body segments are sharply constricted, and the dorsal surfaces of the segments bear tufts of short setæ; the furcal laminæ are distant one from the other, linear and equal in length to the last abdominal segment; seen dorsally the abdominal segments are much constricted in front, rounded off and dilated behind. Anterior antennæ five jointed, much more slender than those of the preceding species, terminal joint three times as long as broad, about equal in length to the second and third joints; the swimming feet are of the normal type; fifth pair simple bi-articulate; the first joint wedge-shaped, expanded distally and bearing a single rather stout seta, second joint smaller and bearing two marginal and two apical setæ.

One specimen only was observed, from a depth of 45 fathoms, among pack-ice, Station 7.

*LAOPHONTODES ECHINATUS sp. nov.*

(Plate XII, figs. 1–8.)

*Female*.—Length 0.87 mm. Cephalic segment wide and subtruncate in front, from which the body gradually tapers backwards; seen dorsally or ventrally the cephalic and the anterior thoracic segments are produced laterally forming strong spinous processes directed backwards, and in a similar manner the first three segments of the urosome are armed with strongly-curved spines, which are marginally ciliated; the caudal rami slender, ciliated and equal in length to the two preceding segments of the urosome; ovisacs large and containing numerous ova. Anterior antennæ slender five (or six?) jointed, the two proximal joints much longer than the distal ones; posterior of the usual type, unbranched; posterior maxilliped normal, much attenuated; first pair of natatory feet not seen; second, third and fourth pairs normal, fifth pair composed of a wide basal joint with two branches, one of which is bi-articulate. One imperfect specimen was found (Station 7) and some important parts—notably the first pair of feet and the anterior antennæ—were either wanting or incomplete, so that the generic reference must for the present be looked upon as merely provisional.

## ISOKERANDRIA.

*Family ONCAEIDÆ.**Genus ONCAEA Philippi, 1843.**ONCAEA CONIFERA Giesbrecht.*

(Plate XII, figs. 15-20.)

*Oncaea conifera* Giesbrecht, 1891, p. 477.

,, ,, 1892, p. 591, Plates 2 and 47.

,, ,, 1902, p. 41, Plate 13.

This species occurs rather plentifully in most of the tow-net gatherings—notably from Stations 7 and 9, but it certainly occurs not uncommonly amongst the crowd of minute species from other localities. The specimens here noted agree in all respects with those described and figured by Dr. Giesbrecht, except perhaps as to the endopodites of the swimming feet which are represented by that author as having profusely setiferous margins. None of those examined by me seem to bear any marginal setæ whatever.

## SUPPLEMENTARY.

*MICROCHELONIA GLACIALIS nov.*

(Plate XV, figs. 1-6.)

It seems desirable to give some account of a very remarkable minute species of which one specimen only could be found in a gathering from Macquarie Island, marked C. 17. I give outline drawings of the entire animal, and of such of the appendages as could be seen after dissection. But the creature was so excessively tough and pachydermatous, and likewise so opaque, that I found it impossible to do more than tear it roughly to pieces. It would seem, however, to form the type of an entirely new division of the Copepoda, and future collectors in the Macquarie area would do well to look out for it. My impression is that it, and probably many other interesting forms would probably be found by washing the fronds and roots of sea-weeds—especially *Laminariæ*. Length, 0.46 mm.



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## EXPLANATION OF PLATES.

## PLATE I.

*Rhincalanus gigas.*

- Fig. 1. Female seen from right side.  $\times 16$ .  
 2. Posterior thoracic segments and abdomen of same seen dorsally.  $\times 16$ .  
 3. Head, rostrum, and base of anterior antennæ of male with sensory filaments.  $\times 25$ .  
 4. Abdomen of female, seen dorsally.  $\times 40$ .  
 5. Posterior antenna.  $\times 84$ .  
 6. „ outer branch only.  $\times 100$ .  
 7. Fifth pair of feet of female.  $\times 84$ .  
 8. „ „ male.  $\times 84$ .

*Paracalanus Mariæ* ♂.

9. Abdomen, seen laterally.  $\times 140$ .  
 10. Mandible and base of palp.  $\times 240$ .  
 11. Posterior maxilliped.  $\times 240$ .  
 12. Foot of fourth pair.  $\times 240$ .  
 13. Foot of fifth pair of male.  $\times 300$ .  
 14. „ „ female.  $\times 300$ .

## PLATE II.

*Stephos longipes.*

- Fig. 1. Female (?), seen from right side.  $\times 40$ .  
 2. Forehead, rostrum, and posterior antenna.  $\times 140$ .  
 3. Posterior maxilliped.  $\times 140$ .  
 4. Foot of first pair.  $\times 240$ .  
 5. „ second pair.  $\times 140$ .  
 6. „ fourth pair.  $\times 115$ .  
 7. Fifth pair of feet (immature male).  $\times 240$ .

*Scolecithrix Römeri* ♂

8. Basal joints of right anterior antenna.  $\times 140$ .  
 9. Left anterior antenna.  $\times 84$ .  
 10. Foot of first pair.  $\times 140$ .  
 11. „ fourth pair.  $\times 140$ .  
 12. Fifth pair of feet.  $\times 110$ .  
 13. Abdomen and furca.  $\times 84$ .

*Euchirella plumosa.*

14. Posterior antenna.  $\times 40$ .  
 15. Mandibular plate.  $\times 84$ .  
 16. Basiopodite of first foot.  $\times 50$ .  
 17. „ fourth foot of female.  $\times 40$ .  
 a Spines more highly magnified.

18. Abdomen of female.  $\times 40$ .
19. Apical spines of fourth foot.  $\times 84$ .

## PLATE III.

*Gaetanus antarcticus*. ♀

- Fig. 1. Female, seen dorsally.  $\times 25$ .
2. Posterior antenna.  $\times 40$ .
  3. Maxilliped (posterior) of right side.  $\times 40$ .
  4. „ „ left side.  $\times 40$ .
  5. Foot of third pair.  $\times 40$ .
  6. „ terminal spines.  $\times 84$ .
  19. Basal joints of fourth foot.  $\times 50$ .

*Euchirella tumida*.

7. Female, seen dorsally.  $\times 40$ .
8. Abdomen of male.  $\times 84$ .
9. Mandible.  $\times 120$ .
10. Biting plate of same.  $\times 300$ .
11. Fifth pair of feet of male.  $\times 84$ .
12. Apical spine of swimming foot.  $\times 240$ .

*Racovitzanus antarcticus*. ♂

13. Anterior antennæ.  $\times 84$ .
14. Mandibular plate.  $\times 400$ .
15. Foot of first pair.  $\times 140$ .
16. „ third pair.  $\times 140$ .
17. Fifth pair of feet.  $\times 240$ .
18. Abdomen, seen dorsally.  $\times 84$ .

## PLATE IV.

*Heterorhabdus austrinus*.

- Fig. 1. Basal joints, anterior antenna.  $\times 84$ .
2. Geniculation, anterior antenna.  $\times 84$ .
  3. Posterior antenna.  $\times 84$ .
  4. Biting plate of mandible, right.  $\times 84$ .
  5. „ „ left.  $\times 84$ .
  6. Maxilla.  $\times 84$ .
  7. Posterior maxilliped.  $\times 150$ .
  8. Foot of third pair.  $\times 45$ .
  9. Fifth pair of feet.  $\times 84$ .

*Heterorhabdus Farrani*. ♂

10. Anterior antenna, right side.  $\times 40$ .
11. Abdomen.  $\times 40$ .
12. Furcal plate with setæ.  $\times 84$ .

13. Mandible of left side.  $\times 40$ .
14. Anterior maxilliped.  $\times 40$ .
15. Basal joints, posterior maxilliped.  $\times 84$ .
16. Foot of third pair.  $\times 40$ .
17. Fifth pair of feet.  $\times 50$ .
18. „ „ (female).  $\times 84$ .

*Metridia Gerlachei.*

19. Right anterior antenna, male.  $\times 84$ .
20. Abdomen, seen dorsally (female).  $\times 25$ .
21. „ „ (male).  $\times 40$ .
22. Fifth pair of feet of male.  $\times 100$ .
23. Foot of fifth pair, female.  $\times 100$ .

PLATE V.

*Streptocalanus typicus.* ♂

- Fig. 1. Male, seen laterally.  $\times 84$ .
2. Anterior antenna.  $\times 140$ .
  3. Posterior antenna.  $\times 140$ .
  4. Mandible.  $\times 240$ .
  5. Posterior maxilliped.  $\times 240$ .
  6. Foot of first pair.  $\times 240$ .
  7. „ second pair.  $\times 240$ .
  8. „ fourth pair.  $\times 200$ .
  9. Fifth pair of feet.  $\times 320$ .

*Boeckella brevicaudata.*

10. Female, seen ventrally.  $\times 40$ .
11. Right anterior antenna of male.  $\times 84$ .
12. Posterior antenna.  $\times 84$ .
13. Anterior maxilliped.  $\times 120$ .
14. Exopodite, first pair of feet.  $\times 140$ .
15. Posterior thoracic segment and abdomen of female.  $\times 40$ .
16. Foot of fifth pair of female.  $\times 140$ .
17. „ „ male.  $\times 84$ .
18. Abdomen of male.  $\times 60$ .
19. Mandible.  $\times 140$ .

PLATE VI.

*Heterorhabdus nigrotinctus.* ♂

- Fig. 1. Left anterior antenna.  $\times 16$ .
2. Posterior antenna.  $\times 40$ .
  3. Maxilla.  $\times 84$ .
  4. Anterior maxilliped.  $\times 40$ .
  5. Right mandible.  $\times 150$ .



- 6. Left mandible.  $\times 150$ .
- 7. Fifth pair of feet.  $\times 40$ .
- 8. Abdomen, seen dorsally.  $\times 40$ .

*Haloptilus ocellatus.*

- 9. Animal, seen dorsally.  $\times 40$ .
- 10. Abdomen and furca.  $\times 40$ .
- 10a. Foot of fifth pair.  $\times 84$ .

*Diarthropus torticornis.*

- 11. Male, seen from right side.  $\times 40$ .
- 12. Female, seen from right side.  $\times 40$ .
- 13. Forehead with tentacles.  $\times 40$ .
- 14. Abdomen of male.  $\times 84$ .
- 15. „ female.  $\times 84$ .
- 16. Mandible.  $\times 84$ .
- 17. Posterior maxilliped.  $\times 84$ .
- 18. Foot of fourth pair.  $\times 84$ .
- 19. „ fifth pair, male.  $\times 84$ .

## PLATE VII.

*Pseudoöthrix anatina.* ♀

- Fig. 1. Female, seen from left side.  $\times 84$ .
- 2. Rostrum, lateral view.  $\times 240$ .
  - 3. Posterior antenna.  $\times 240$ .
  - 4. Mandible.  $\times 240$ .
  - 5. Maxilla.  $\times 240$ .
  - 6. Anterior maxilliped.  $\times 240$ .
  - 7. Posterior maxilliped.  $\times 140$ .
  - 8. Foot of first pair.  $\times 140$ .
  - 9. „ fourth pair.  $\times 140$ .
  - 10, 11. Fifth pair of feet, two forms.  $\times 240$ .

*Gaidius glacialis.*

- 12. Female, seen laterally.  $\times 40$ .
- 13. Rostrum.  $\times 40$ .
- 14. Posterior antenna.  $\times 84$ .
- 15. Mandible.  $\times 84$ .
- 16. Anterior maxilliped.  $\times 84$ .
- 17. Posterior maxilliped.  $\times 84$ .
- 18. Foot of fifth pair.  $\times 150$ .

## PLATE VIII.

*Plagiopus australis.*

- Fig. 1. Female, seen laterally.  $\times 80$ .
- 2. Mandible blade.  $\times 240$ .

3. Anterior maxilliped.  $\times 140$ .
4. Posterior maxilliped.  $\times 140$ .
5. Foot of first pair.  $\times 140$ .
6. „ second pair.  $\times 115$ .
7. „ fourth pair.  $\times 140$ .
8. Fifth pair of feet.  $\times 300$ .
9. Apical spine of exopodite.  $\times 240$ .

*Pleuromamma Wolfendeni.* ♀

10. Abdomen, seen ventrally.  $\times 84$ .
11. Basal joints, anterior antenna.  $\times 84$ .
12. Posterior antenna.  $\times 84$ .
13. Mandible, biting edge.  $\times 240$ .
14. Foot of second pair.  $\times 84$ .
15. „ fourth pair.  $\times 84$ .
16. Fifth pair of feet.  $\times 140$ .
17. Apex of right fifth foot.  $\times 300$ .
18. Apical spine of exopodite.  $\times 240$ .

*Aetideus Bradyi.*

19. Female, seen dorsally.  $\times 65$ .
20. Rostrum, lateral view.  $\times 65$ .

*Spinocalanus Giesbrechti.*

21. Abdomen of male.  $\times 50$ .
22. „ female.  $\times 50$ .
23. Foot of first pair, male.  $\times 140$ .
24. „ fourth pair, male.  $\times 140$ .
25. „ fifth pair, male.  $\times 300$ .

PLATE IX.

*Euchaetopsis Haswelli.* ♀

- Fig. 1. Female, seen dorsally.  $\times 40$ .
2. Posterior antenna.  $\times 240$ .
  3. Mandible.  $\times 240$ .
  4. Foot of first pair.  $\times 110$ .
  5. „ fourth pair.  $\times 84$ .
  6. Apical spines of exopodite.  $\times 240$ .
  7. Portion of apical seta of first maxilliped.  $\times 440$ .

*Metridia Andraena.*

8. Abdomen, last thoracic segment and fifth pair of feet (female).  $\times 84$ .
9. The same parts of the male.  $\times 84$ .
10. Abdomen of male, seen dorsally.  $\times 84$ .
- 10a. Foot of fifth pair.  $\times 240$ .
11. Basal joints of anterior antenna of female.  $\times 84$ .

*Stephos simillimus.* ♀

- 12. Female, seen laterally. × 65.
- 13. Posterior antenna. × 100.
- 14. Mandible. × 300.
- 15. Posterior maxilliped. × 240.
- 16. Last joint of third exopodite. × 240.
- 17. Basal joint of fourth foot. × 440.
- 18. Last thoracic segment and abdomen. × 140.

*Calanus aculeatus.* ♀

- 19. Last thoracic segment and abdomen. × 65.
- 20. Apical joints and setæ of anterior antenna. × 65.
- 21. Mandible and palp. × 140.
- 22. Blade of mandible. × 140.
- 23. Basal joint and serratures of fifth foot. × 240.

## PLATE X.

*Amphiascus elegans.*

- Fig. 1. Female, seen laterally. × 84.
- 2. Anterior antenna and rostrum, female. × 200.
  - 3. Anterior antenna of male. × 240.
  - 4. Posterior antenna. × 240.
  - 5. Posterior maxilliped. × 350.
  - 6. Foot of first pair. × 200.
  - 7. „ third pair. × 140.
  - 8. Endopodite of second foot of male. × 300.
  - 9. Foot of fifth pair, female. × 200.
  - 10. „ „ male, × 240.
  - 11. Posterior abdominal segments, female. × 140.
  - 12. Basal spines of first foot.

*Amphiascus ignotus.* ♂

- 13. Anterior antenna. × 240.
- 14. Mandible. × 320.
- 15. Foot of first pair. × 240.
- 16. „ second pair. × 240.
- 17. Fifth pair of feet. × 240.

*Oithona frigida.*

- 18. Female, seen dorsally. × 65.
- 19. Anterior maxilliped. × 320.
- 20. Posterior maxilliped. × 180.



## PLATE XI.

*Laophontodes latissimus.* ♀

- Fig. 1. Female, seen dorsally.  $\times 84$ .  
 2. „ laterally.  $\times 84$ .  
 3. Abdomen and furca.  $\times 240$ .  
 4. Anterior antenna.  $\times 300$ .  
 5. Posterior antenna.  $\times 300$ .  
 6. Posterior maxilliped.  $\times 240$ .  
 7. Foot of first pair.  $\times 240$ .  
 8. „ third pair.  $\times 240$ .  
 9. „ fifth pair.  $\times 300$ .

*Laophontodes antarcticus.* ♀

10. Female, seen dorsally.  $\times 115$ .  
 11. „ laterally.  $\times 115$ .  
 12. Anterior antennæ.  $\times 300$ .  
 13. Posterior antennæ.  $\times 320$ .  
 14. Posterior maxilliped.  $\times 240$ .  
 15. Foot of first pair.  $\times 300$ .  
 16. „ third pair.  $\times 300$ .  
 17. „ fifth pair.  $\times 320$ .

## PLATE XII.

*Laophontodes echinatus.* ♀

- Fig. 1. Female, seen ventrally.  $\times 84$ .  
 2. „ laterally.  $\times 84$ .  
 3. Abdomen and furca, dorsal view.  $\times 84$ .  
 4. Anterior antenna.  $\times 240$ .  
 5. Posterior antenna.  $\times 240$ .  
 6. Posterior maxilliped.  $\times 240$ .  
 7. Foot of third pair.  $\times 140$ .  
 8. „ fifth pair.  $\times 150$ .

*Stenhelis (?) glacialis.*

9. Female, seen laterally.  $\times 150$ .  
 10. Anterior antenna.  $\times 320$ .  
 11. Foot of first pair.  $\times 440$ .  
 12. „ third pair.  $\times 440$ .  
 13. „ fifth pair.  $\times 440$ .  
 14. Posterior segments of abdomen.  $\times 240$ .

*Oncaea conifera.* ♀

15. Female, seen dorsally.  $\times 84$ .  
 16. Anterior antenna.  $\times 140$ .  
 17. Posterior antenna.  $\times 140$ .

- 18. Anterior maxilliped.  $\times 300$ .
- 19. Posterior maxilliped.  $\times 140$ .
- 20. Foot of fourth pair.  $\times 140$ .

## PLATE XIII.

*Machairopus Sarsi.* ♀

- Fig. 1. Female, seen dorsally.  $\times 84$ .
- 2. „ with ovisac.  $\times 65$ .
  - 3. Anterior antenna.  $\times 240$ .
  - 4. Posterior antenna.  $\times 300$ .
  - 5. „ maxilliped.  $\times 300$ .
  - 6. Foot of first pair.  $\times 240$ .
  - 7. „ fourth pair.  $\times 240$ .
  - 8. „ fifth pair.  $\times 240$ .

*Microsetella atlantica.* ♀

- 9. Female, seen laterally.  $\times 140$ .
- 10. Anterior antennæ.  $\times 240$ .
- 11. Foot of third pair.  $\times 240$ .
- 12. „ fifth pair.  $\times 240$ .

*Mawsonella typica.* ♀

- 13. Anterior antenna (imperfect).  $\times 300$ .
- 14. Posterior antenna.  $\times 300$ .
- 15. Posterior maxilliped.  $\times 300$ .
- 16. Foot of first pair.  $\times 240$ .
- 17. „ second pair.  $\times 240$ .
- 18. „ third pair.  $\times 240$ .
- 19. Fifth pair of feet.  $\times 240$ .
- 20. Posterior abdominal segments and furca.  $\times 84$ .

## PLATE XIV.

*Acartia ensifera* ?.

- Fig. 1. Anterior antenna of female.  $\times 140$ .
- 2. Front of head and rostrum, seen dorsally.  $\times 150$ .
  - 3. Posterior antenna.  $\times 150$ .
  - 4. Abdomen of female, seen laterally.  $\times 240$ .
  - 5. „ male, seen dorsally.  $\times 240$ .
  - 6. Fifth pair of feet of male.  $\times 320$ .

*Paraeuchata plumifera.*

- 7. Anterior antenna.  $\times 30$ .
- 8. Posterior antenna.  $\times 84$ .
- 9. Exopodite of first foot.  $\times 84$ .
- 10. Abdomen.  $\times 31$ .
- 11. Last joint of abdomen and furca.  $\times 22$ .

*Metridia trispinosa.* ♂

12. Anterior antenna.  $\times 40$ .
13. „ „ proximal joints.  $\times 100$ .
14. Basal joint of endopodite of second foot.  $\times 100$ .
15. Fifth foot (imperfect).  $\times 65$ .
16. Abdomen.  $\times 40$ .
17. Spines of last abdominal segment.  $\times 84$ .

## PLATE XV.

*Microchelonia glacialis.*

- Fig. 1. Male (?), seen dorsally.  $\times 150$ .  
 2 „ „ laterally.  $\times 150$ .  
 3. Abdomen and furca.  $\times 240$ .  
 4. Anterior antenna.  $\times 240$ .  
 5. Posterior antenna.  $\times 240$ .  
 6. Maxilliped.  $\times 240$ .

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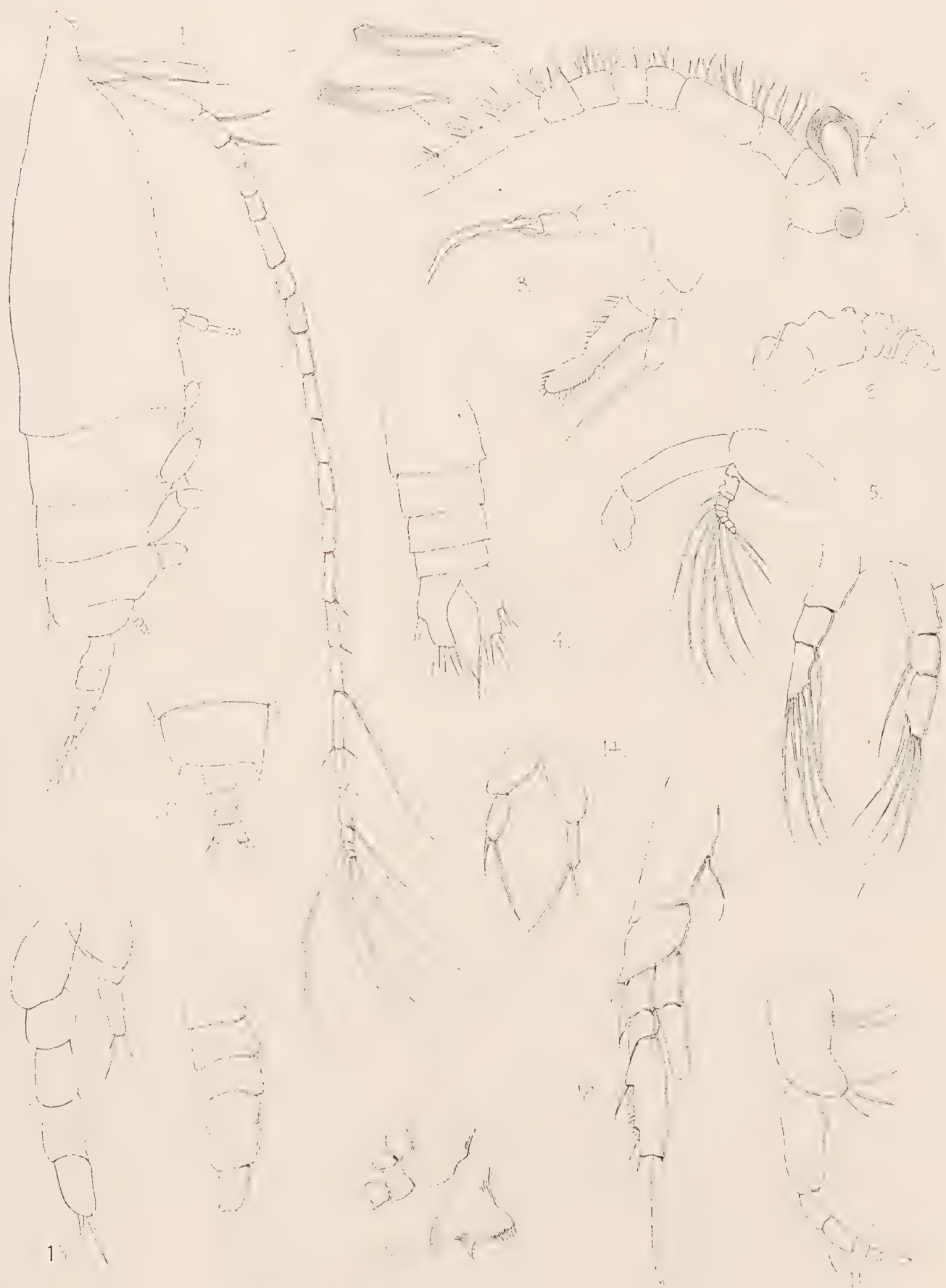
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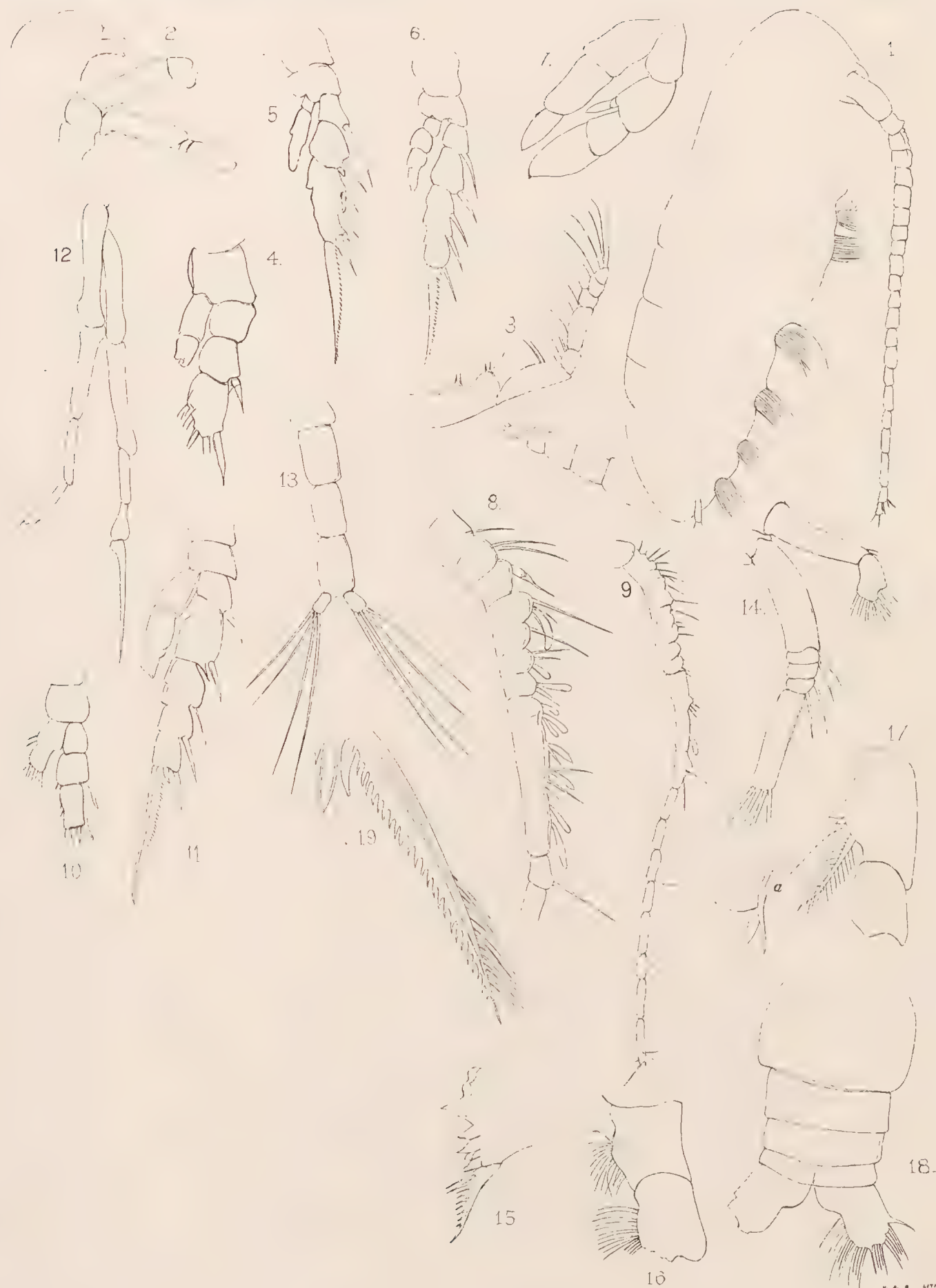


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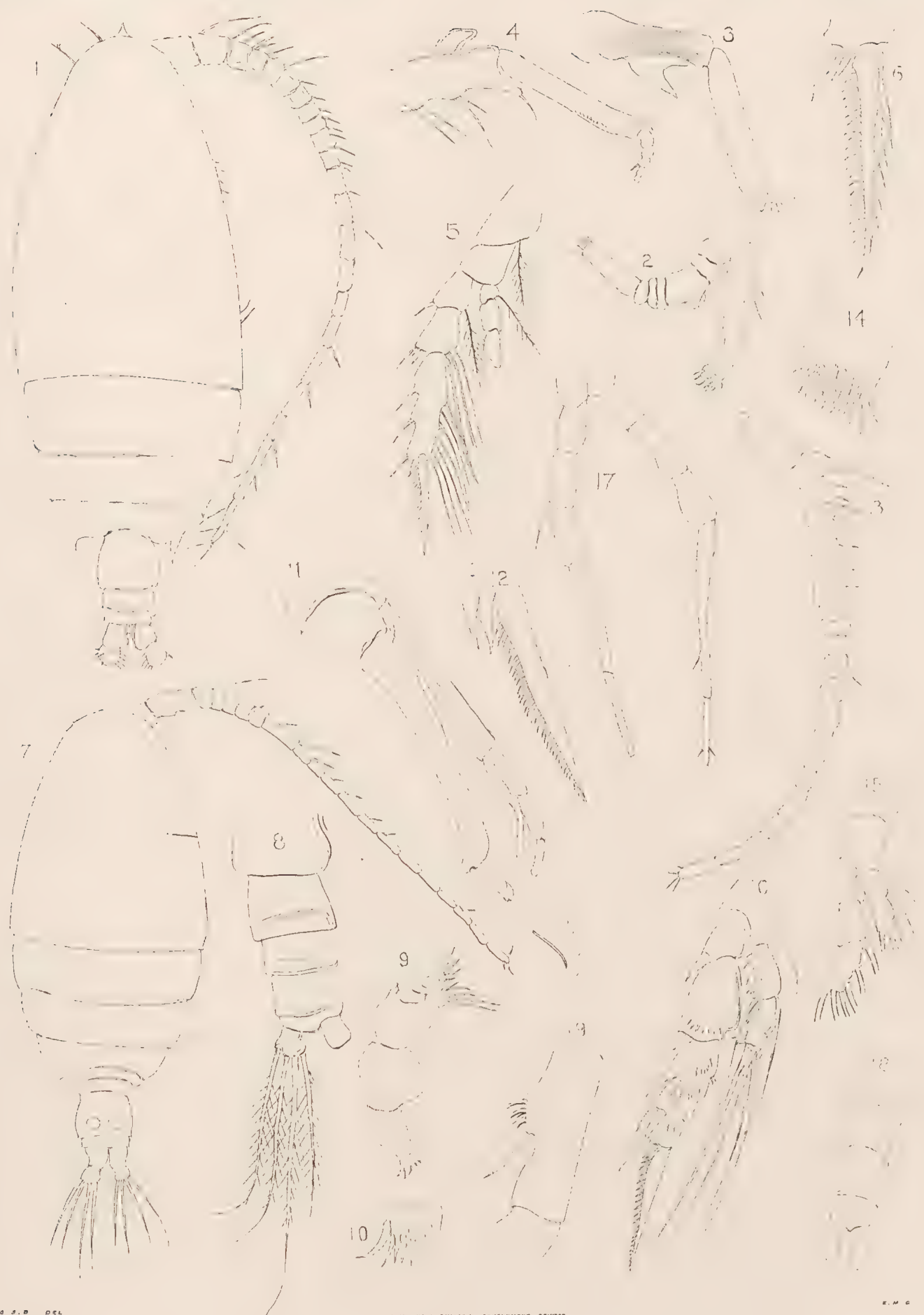


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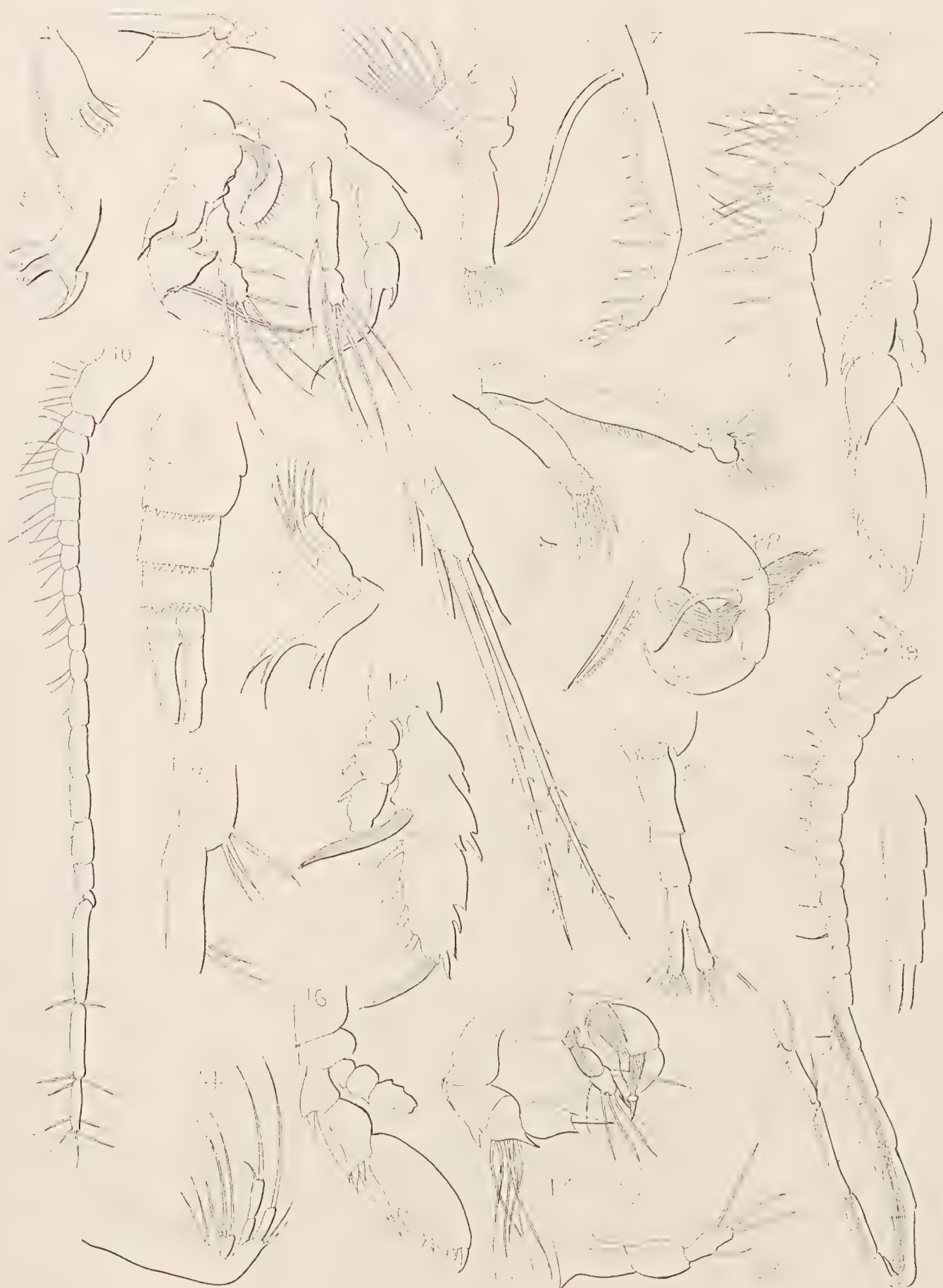


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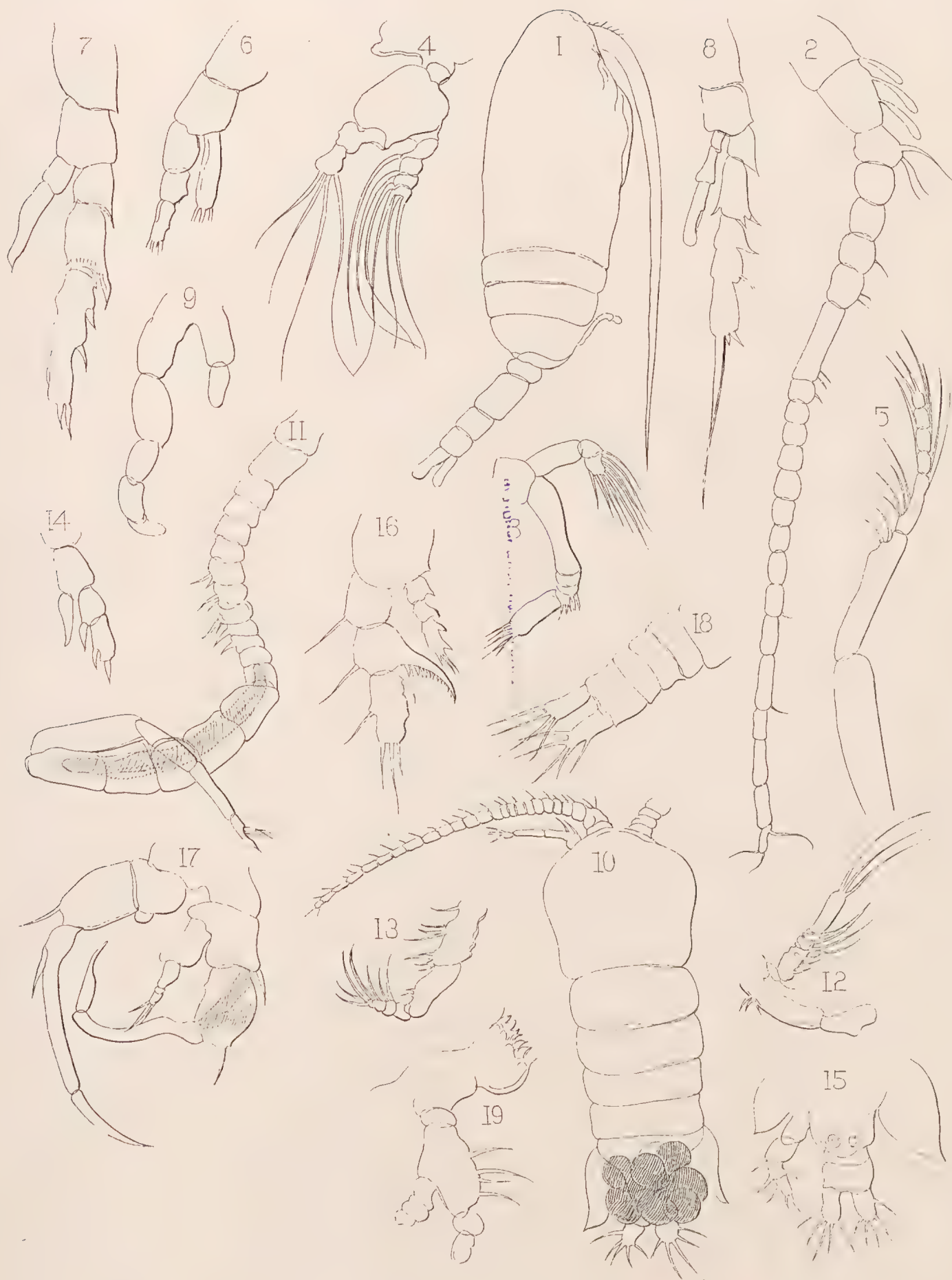


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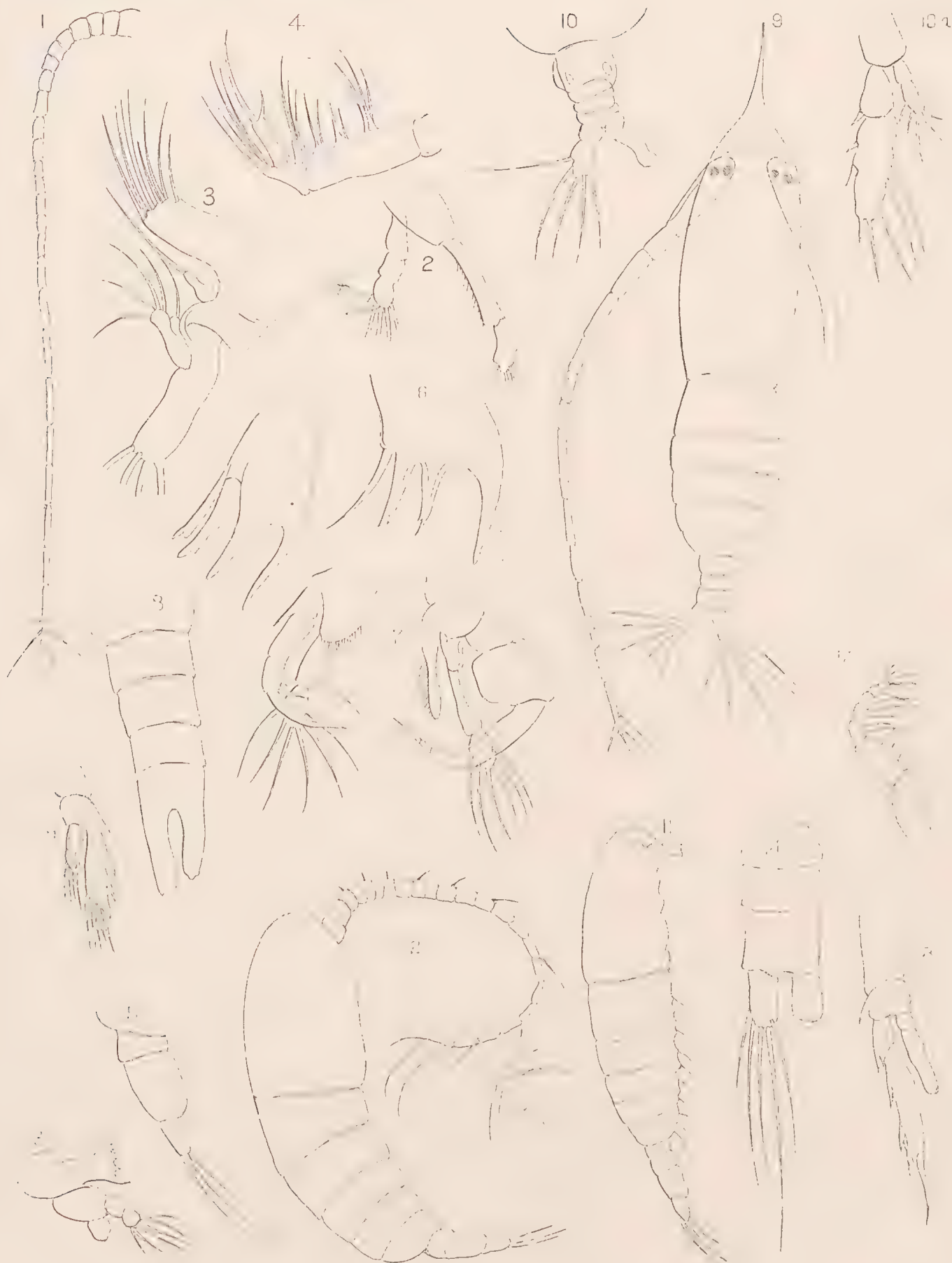


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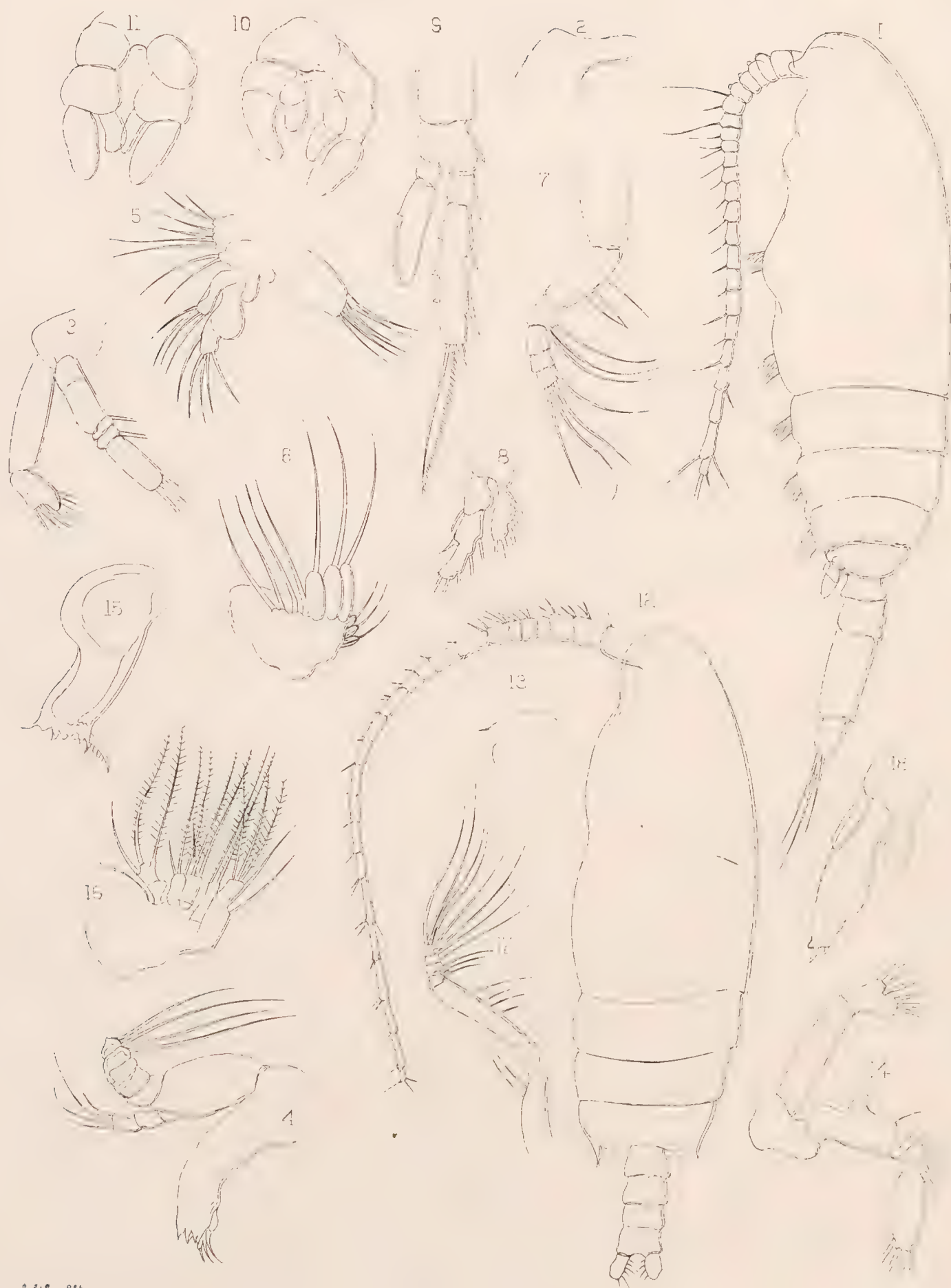


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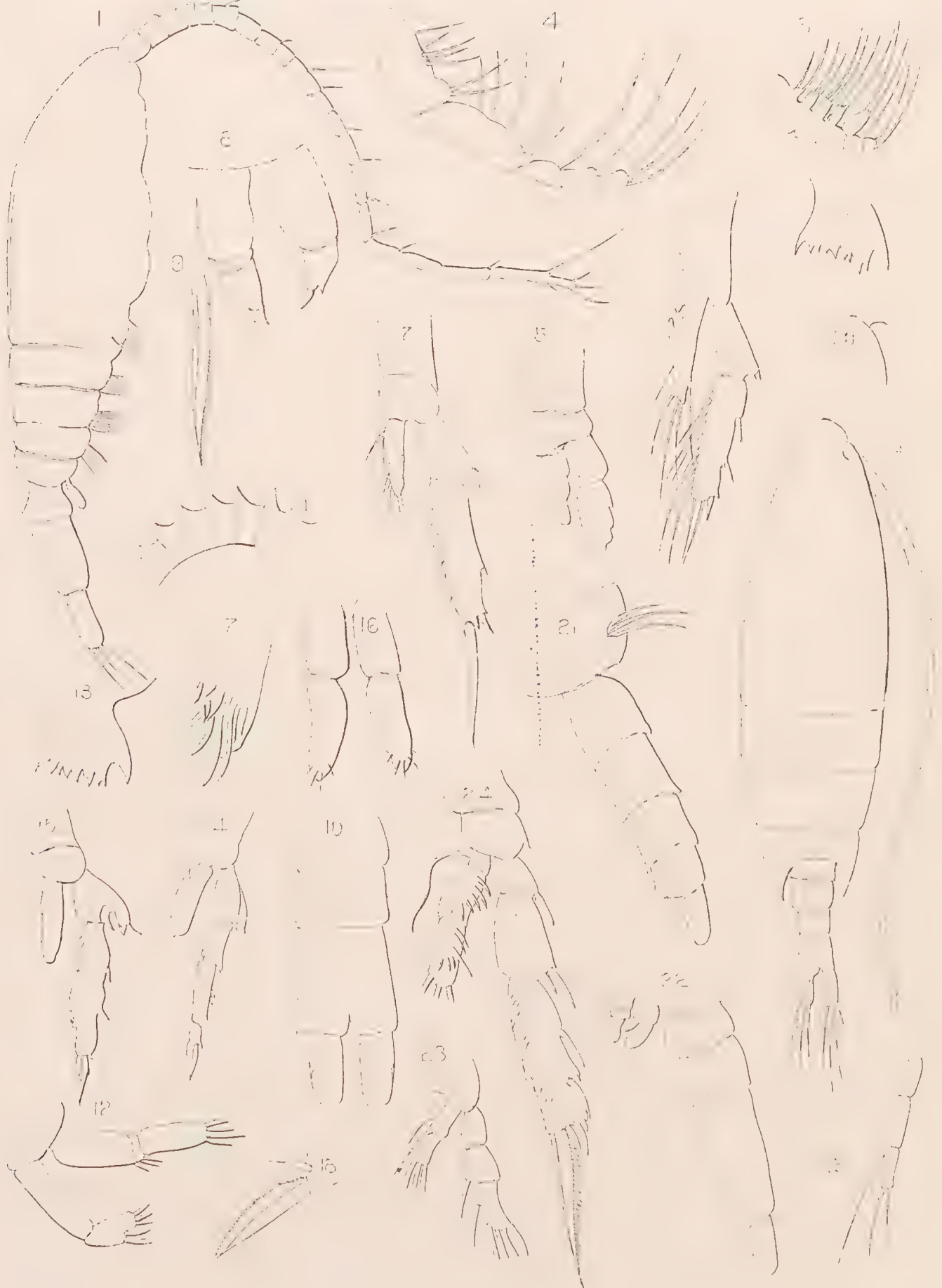


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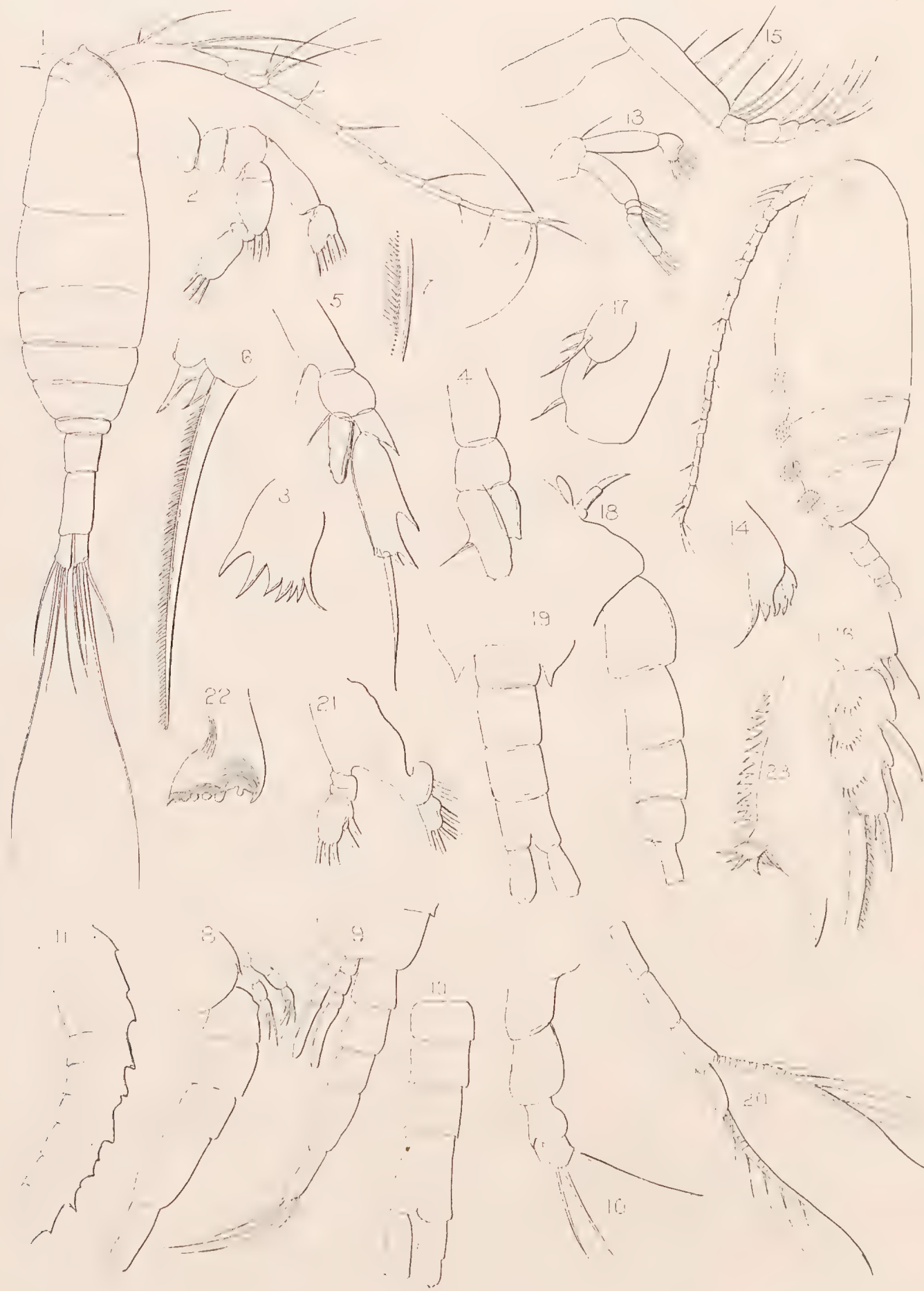


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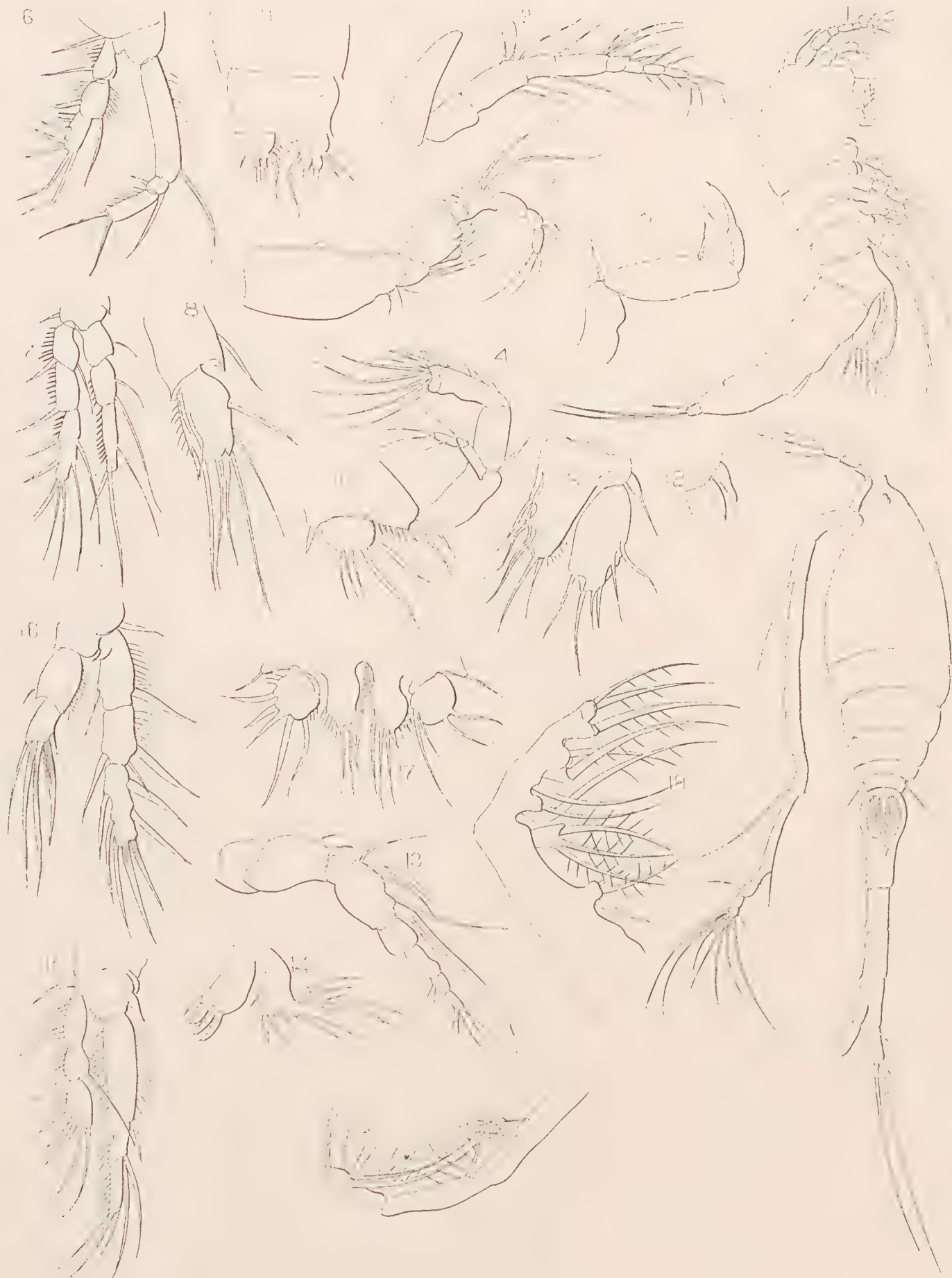


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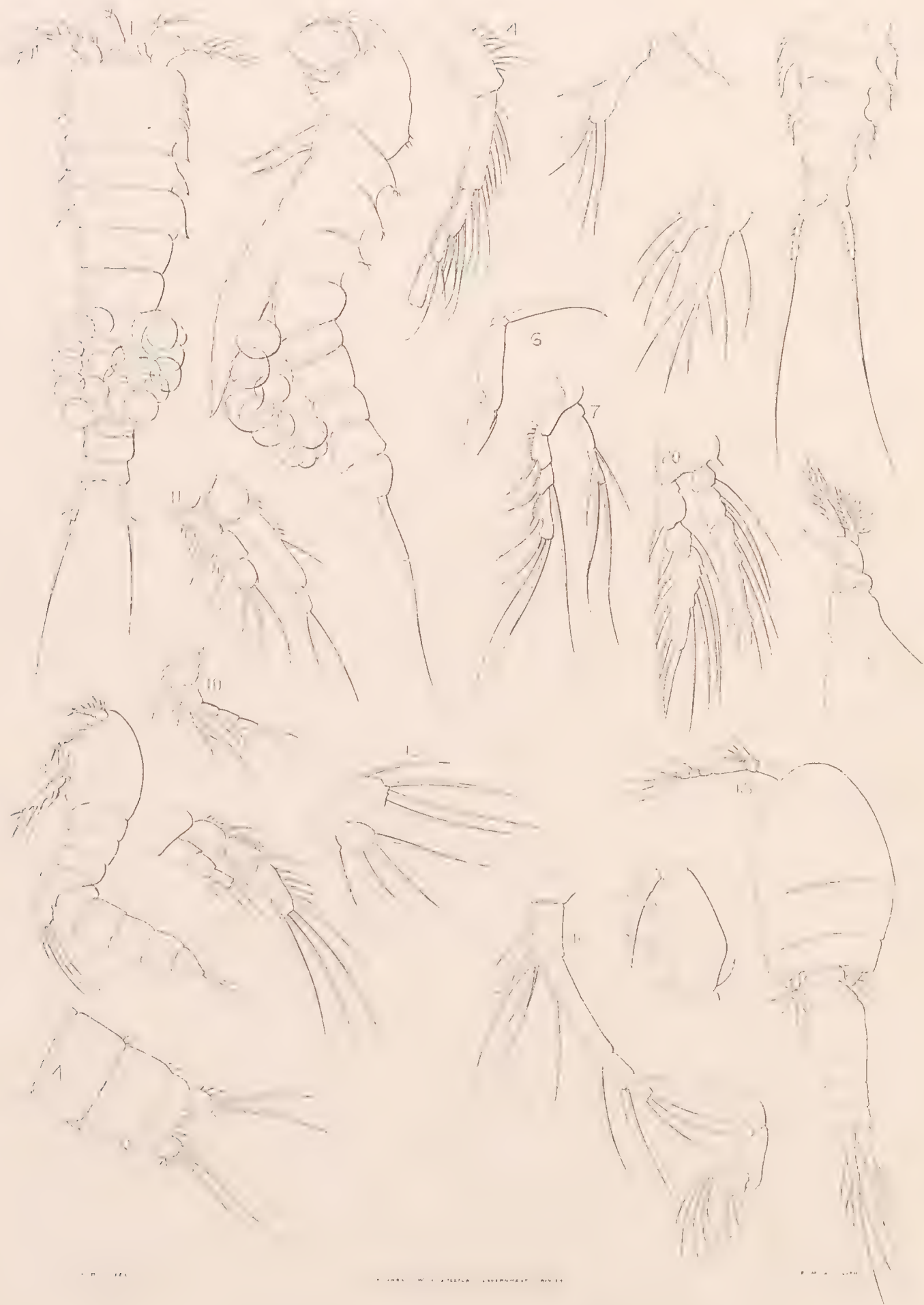


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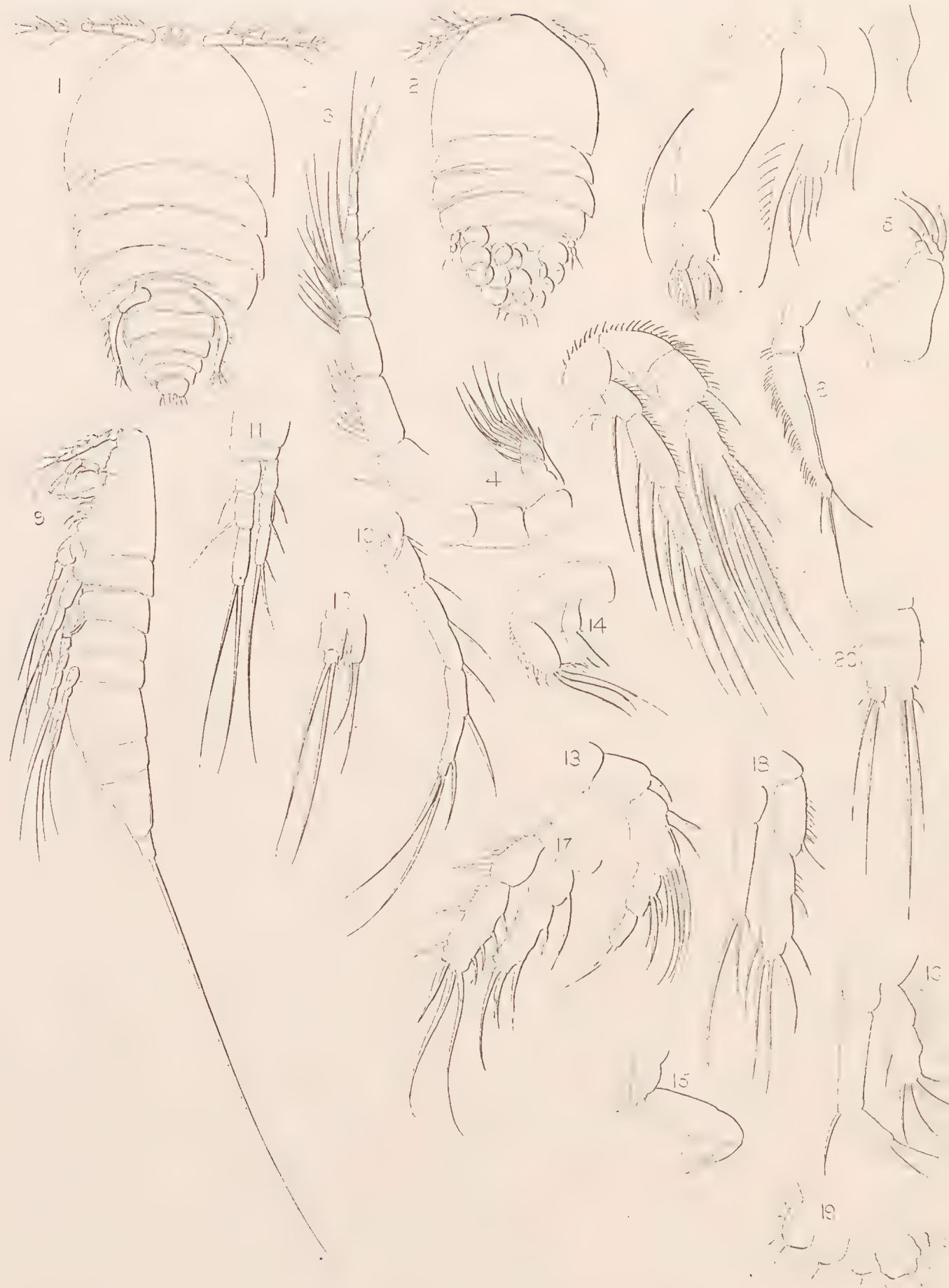
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AUSTRALASIAN ANTARCTIC EXPEDITION  
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UNDER THE LEADERSHIP OF SIR DOUGLAS MAWSON, D.Sc., B.E.

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SCIENTIFIC REPORTS.  
SERIES C.—ZOOLOGY AND BOTANY.  
VOL. V. PART 4.

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CLADOCERA AND HALOCYPRIDÆ

BY

G. STEWARDSON BRADY, M.D., LL.D., D.Sc., F.R.S.

WITH TWO PLATES.

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PRICE : TWO SHILLINGS.  
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NATIONAL MUSEUM WASHINGTON

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# CLADOCERA AND HALOCYPRIDÆ.

By G. STEWARDSON BRADY, M.D., LL.D., D.Sc., F.R.S.

(Plates XVI and XVII.)

## CLADOCERA.

*Genus SIMOCEPHALUS Schoedler, 1858.*

*SIMOCEPHALUS GELIDUS sp. nov.*

(Plate XVI, figs. 10-13.)

Seen laterally the shell is elongated, fully twice as long as broad; head rounded in front and produced ventrally in a straight line to a sharply prominent backward-pointed beak. Dorsal margin almost straight throughout, ending abruptly in an obtuse angle; ventral margin gently arched in front and continued with a distinct curvature to the well-marked postero-dorsal angle. Seen dorsally or ventrally the outline of the shell is almost circular, the head forming a very prominent rounded segment in front. Dorsal processes of the abdomen well developed, the two proximal ones stout and strongly curved in opposite directions; pre-anal spines twelve in number, separated into two distinct series of six each; terminal unguis slender, without serratures or marginal fringe. Length, 2.5 mm.

Taken plentifully in fresh water on Macquarie Island by Mr. H. Hamilton.

The Rev. R. L. King in a paper on the Daphniadæ of New South Wales\* describes very shortly, and figures *Daphnia Elizabethæ*, a species which evidently approaches very closely that now described under the specific name *gelidus*, but the shape of the shell as also the spinous armature of the postabdomen do not allow of identification with that species.

*Daphnia cavicervix*, described by Dr. Sven Ekman† bears some resemblance to this species, but the furcate spines of the postabdomen together with the conspicuously fringed terminal claws sufficiently distinguish it from *S. gelidus*.

*Genus CHYDORUS Leach.*

*CHYDORUS MACQUARIENSIS sp. nov.*

(Plate XVII, figs. 17-19.)

This might very readily be taken on a casual glance for *Chydorus piger*, G. O. Sars, as figured by Prof. Lilljeborg in his work on the Swedish Cladocera. But it

---

\*Papers and Proceedings of the Royal Society of Van Diemen's Land, 1853.

†Cladoceren aus Patagonien (Zoologisches Jahrbuch, 1900).



seems to differ very essentially in the marginal armature of the caudal laminæ; these tufts, which with a magnifying power seem to be separate spines, consisting really of fascicles of minute setæ; the terminal claw is well developed and bears at its base a single spine. Females only were found, length 0.66 mm.

A few specimens found in a fresh-water gathering from Macquarie Island (H. Hamilton).

## OSTRACODA.

### *Family* HALOCYPRIDÆ.

#### *Genus* CONCHOECIA Dana.

##### 1. CONCHOECIA BOREALIS G. O. Sars.

1865. *Conchoecia borealis* G. O. Sars—Oversigt af Norges marine Ostracoda, p. 119.
1986. „ Brady and Norman—Ostracoda of the North Atlantic and North-western Europe, p. 685, Plate LXI, figs. 9–19.

Taken in gatherings from off Maria Island, Tasmania, in depths of 100 fathoms (10th January, 1914) and (9th January, 1914), and in 50 fathoms (6th January, 1914) and (11th January, 1914).

These specimens differ from the typical Greenland specimens of Prof. G. O. Sars, in having no distinct reticulated sculpture of the shell and in the absence of teeth on the postero-ventral margin. In these characters they are more like *C. maxima* Brady and Norman.

##### 2. CONCHOECIA SERRULATA Claus.

(Plate XVII, figs. 10–16.)

1874. *Conchoecia serrulata* Claus—Die Familie der Halocypriden, Taf. 1 and Taf. 2.
1890. *Pseudoconchoecia serrulata* Claus—Die Gattungen und Arten der Meditteranen und Atlantischen Halocypriden, p. 20.
1880. *Halocypris atlantica* Lubbock, Brady—Report on Ostracoda of the “Challenger” Expedition, Plate XL, figs. 1–15, Plate XLI, figs. 11, 12.
1906. *Conchoecia serrulata* G. W. Müller—Ostracoda der deutschen Tiefsee Expedition auf der Dampfer Valdivia, p. 97, Taf. XXII, fig. 24, Taf. XXIII, figs. 20–30.

Taken in tow-net gatherings from off Maria Island, Tasmania, from off Macquarie Island, 2 fathoms (21st June, 1912) and by tow-net at night, Lusitania Bay, Macquarie Island (11th January, 1912).

3. CONCHOECIA HETTACRA *G. W. Müller.*

(Plate XVII, figs. 1-5.)

1906. *Conchoecia hettacra* *G. W. Müller*—L.C., Taf. XXIX, figs. 11-19.

Length 2.30 mm. Seen laterally the width of the shell is equal to one half of the length, the subrostral sinus is fairly well developed. The anterior and posterior extremities are obliquely rounded, and the posterior ventral angle is obtuse and toothless; the peculiar nodulated principal seta of the anterior antenna of the male is a sufficiently distinctive character of the species; the capitulum of the frontal tentacle is broadly dilated at the base, and clubbed at the apex; secondary branch of the posterior antenna bearing two small lateral setæ and a strong rectangularly bent falciform claw: in the female only two small setæ and an almost obsolete wart-like process.

*C. hettacra* occurred in the following localities—probably also in others where it may have escaped notice:—

Off Maria Island, Tasmania, tow-net in 45 fathoms (4th January, 1914), 30 fathoms (6th January, 1914), 100 fathoms (9th January, 1914), and 10th January, 1914).

4. CONCHOECIA PARTHENODA *G. W. Müller.*1906. *Conchoecia parthenoda* *G. W. Müller*—Taf. XVI, figs. 24-29.

(Plate XVII, figs. 6-9.)

*Female*.—Length 1 mm. Seen laterally the width is equal to considerably more than half the length; rostrum very sharp and prominent, postero-ventral angle obtuse, subrostral sinus very shallow. Frontal tentacle stylet-shaped, with sharp apex, capitulum scarcely separate from the stem.

Dr. Müller points out that this species is very closely related to *C. obtusata* and *C. spinirostris*—being in fact only doubtfully separated from them. The only specimens I have seen—not more than one or two—are from a tow-netting at a depth of 100 fathoms (10th January, 1914).

*Genus* ARCHICONCHOECIA *G. W. Müller, 1894.\**

1. ARCHICONCHOECIA MÜLLERI *sp. nov.*

(Plate XVI, figs. 1-6.)

*Female*.—Length 0.6 mm. Seen laterally the width is equal to three-fourths of the length; dorsal margin slightly convex towards the front, ventral very strongly convex throughout; rostrum short and sharply pointed, the subjacent sinus very wide and shallow; posterior extremity wide and truncate, almost straight, with rather prominent dorsal and ventral angles; seen dorsally the outline is oval, widest in the

---

\*Die Ostracoden des Golfes von Neapel.

middle, scarcely twice as long as broad. The anterior antenna bears six long sensory setæ, springing from three quite separate digitiform processes; frontal tentacle club-shaped, reaching not beyond the extremity of the antenna; inner branch of the posterior antenna bearing five long terminal setæ, and a small wart-like process with two very small spine-like setæ. Male unknown.

Several specimens—all females— were taken by the tow-net in a depth of 2 fathoms off Macquarie Island.

This species is separated from other members of the genus by the three distinct processes of the anterior antennæ, each of them bearing two sensory setæ.

2. ARCHICONCHOECIA AURORÆ *sp. nov.*

(Plate XVI, figs. 7-9.)

*Female*.—Length 2.2 mm. Seen laterally the width is equal to half the length; dorsal margin slightly sinuated in the middle, ventral very slightly arched; rostrum stout, prominent, and sharply pointed; anterior margin of the shell moderately rounded ventrally, posterior rounded off ventrally, abruptly rounded dorsally. Anterior antenna bearing two long terminal setæ and six shorter sensory ones, all rising from the terminal joint. Capitulum of the frontal tentacle pointed and slightly emarginate at the apex, its lower margin finely ciliated throughout.

One specimen only, taken in the tow-net, depth 30 fathoms (6th January, 1914).



## EXPLANATION OF PLATES.

## PLATE XVI.

*Archiconchoecia Mülleri* ♀.

- Fig. 1. Shell, seen laterally.  $\times 84$ .  
 2. „ dorsally.  $\times 84$ .  
 3. Anterior antenna with frontal stylet.  $\times 240$ .  
 4. Inner branch of posterior antenna.  $\times 240$ .  
 5. Biting portion of mandible.  $\times 240$ .  
 6. Post-abdominal lamina.  $\times 240$ .

*Archiconchoecia Auroræ* ♀.

7. Shell of female, seen laterally.  $\times 30$ .  
 8. Anterior antenna and frontal stylet.  $\times 84$ .  
 9. Inner branch of posterior antenna.  $\times 84$ .

*Simocephalus gelidus* ♀.

10. Female, seen laterally.  $\times 40$ .  
 11. „ ventrally.  $\times 30$ .  
 12. Post-abdomen.  $\times 84$ .  
 13. Spines of the same.  $\times 240$ .

## PLATE XVII.

*Conchoecia hettacra*.

- Fig. 1. Shell, seen laterally, male.  $\times 33$ .  
 2. Anterior antenna and tentacle, male.  $\times 84$ .  
 a. „ seta, more highly magnified.  
 3. Inner branch of posterior antenna, male.  $\times 84$ .  
 4. „ „ „ female.  $\times 84$ .  
 5. Biting portion of mandible.  $\times 84$ .

*Conchoecia parthenoda* ♀.

6. Shell of female, seen laterally.  $\times 84$ .  
 7. Anterior antenna and tentacle, female.  $\times 240$ .  
 8. Inner branch, posterior antenna.  $\times 240$ .  
 9. Biting portion of mandible.  $\times 240$ .

*Conchoecia serrulata*.

10. Shell of female, seen laterally.  $\times 40$ .  
 a. Portion of ventral margin.  $\times 84$ .  
 11. Shell, seen dorsally.  $\times 40$ .



12. Anterior antenna of male. + 84.
13. Capitulum of tentacle, male. × 240.
14. Inner branch, posterior antenna, male. × 240.
15. „ „ „ „ female. × 240.
16. Copulatory organ, male. × 240.

*Chydorus macquariensis.*

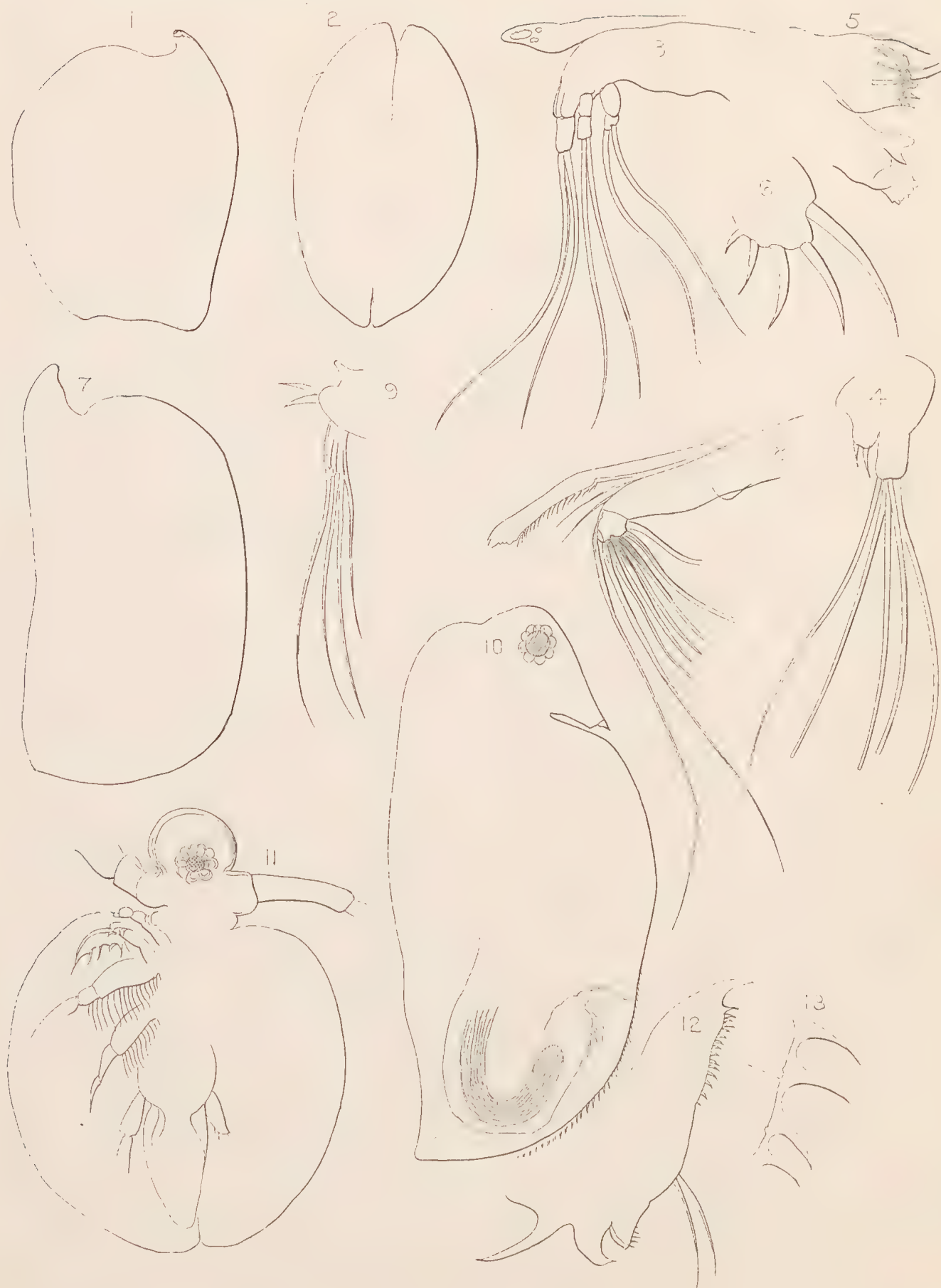
17. Female, seen laterally. × 84.
18. „ anterior antenna. × 240.
19. Caudal lamina. × 440.

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EUPHAUSIACEA AND MYSIDACEA

BY

W. M. TATTERSALL, D.Sc

WITH ONE PLATE.

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PRICE : ONE SHILLING AND SIXPENCE.  
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Plate XVIII.

NATIONAL MUSEUM, WASHINGTON.



# EUPHAUSIACEA AND MYSIDACEA.

BY WALTER M. TATTERSALL, D.Sc., KEEPER OF THE MANCHESTER MUSEUM.

With Plate XVIII.

THROUGH the courtesy of Professor Haswell I have had the opportunity of examining the Crustacea belonging to the old order Schizopoda, collected during the course of the Australian Antarctic Expedition under the leadership of Sir Douglas Mawson.

The expedition explored that part of the Antarctic continent and adjacent ocean which lies between Kaiser Wilhelm II Land (the head-quarters of the German Expedition) and Victoria Land (the head-quarters of the British Expeditions), *i.e.*, between 90° E. long. and 170° E. long.

Of the numerous recent expeditions to the Antarctic, the French, Belgian, Swedish, German, Scotch, and English have already published reports on the orders of Crustacea here dealt with, and as these expeditions between them cover the entire Antarctic Ocean, our knowledge of the Schizopodan Fauna of these waters is now considerable. It was, therefore, not to be expected that the present collection would be rich in novelties, and indeed such is the case. The collection is a small one, comprising four species of Euphausians, and two of Mysids. One species of Mysid is new to science, but it is not an Antarctic species, having been collected in the Auckland Islands. The other five species are well known Antarctic and Sub-Antarctic species which have been reported by all the recent South Polar Expeditions.

The new species belongs to a genus described in 1900 by Mr. G. M. Thomson, from specimens collected in New Zealand waters. Since that date it does not appear to have been met with. The discovery of a second species by the "Aurora," is, therefore, a matter of some interest.

I wish to express my thanks to Professor Haswell for his kindness in entrusting this collection to me for examination and report.

## ORDER EUPHAUSIACEA.

## Family EUPHAUSIIDÆ.

## Genus EUPHAUSIA Dana.

## EUPHAUSIA SUPERBA Dana.

*E. superba* Tattersall, 1908. (With full synonymy.)

*E. superba* Hansen, 1913.

## Localities—

3rd January, 1914	} In surface tow-nettings taken during the cruise along the pack-ice westward from Adelie Land to Davis Sea.
4th January, 1914	
5th January, 1914	
6th January, 1914	
14th January, 1914	Numerous specimens up to 50 mm.

From the stomach of a Weddell seal and an Emperor penguin, Adelie Land, January, 1913.

From the stomach of *Trematomus lœnnbergii* Regan, No. 10, and *Prionodraco* sp., No. 62.

*Euphausia superba* is known to form a large part of the food of the crab-eating seal, *Lobodon carcinophaga* and of the Antarctic penguins, but I am not aware that it has been previously recorded from Weddell's Sea, *Leptonychotes weddelli*, or from any of the Antarctic fishes.

## EUPHAUSIA CRYSTALLOROPHIAS Holt and Tattersall.

*E. crystallorophias* Holt and Tattersall, 1906.

*E. crystallorophias* Tattersall, 1908.

*E. crystallorophias* Hansen, 1908.

## Locality.

From the stomach of *Trematomus eulepidotus* Regan, No. 18, several specimens in a somewhat fragmentary condition. This species comes very near to *Euphausia frigida* Hansen, but may be recognised by the much longer rostrum and by the absence of lobes on the distal extremity of the basal joint of the antennular peduncle. The copulatory organs on the first pleopods of the male are very similar indeed to those described by Hansen for his species.

*E. crystallorophias* was captured in enormous numbers by the "Discovery," from holes made in the ice at Winter Quarters on Victoria Land, to the east of the area explored by the "Aurora." It has only been recorded by one other South Pole Expedition, the "Belgica," having captured three young specimens in about lat. 70° S., long. 82° 37' W.



*Genus* THYSANOESSA Brandt.

## THYSANOESSA GREGARIA G. O. Sars. ?

*T. gregaria* Hansen, 1911.

*T. gregaria* Hansen, 1913.

*Locality.*

Off Macquarie Island, 18–19th June, 1912, 26 m. tow-net, 8 p.m.–8 a.m., sixty-three specimens, 4–10 mm.

These specimens are all immature and very fragmentary. Only two specimens retain their long legs. In one of these specimens, 6.5 mm. in length, the fifth joint of the long leg is twice as long as the sixth and seventh joints combined. In the other specimen, 10 mm. long, the fifth joint is one and three quarter times as long as the combined sixth and seventh joints. In both specimens the combined length of the fourth and fifth segments of the abdomen is one and a quarter times the length of the sixth segment. Small specimens of *Thysanoessa* are extremely difficult to determine, and Hansen, who has studied this genus exhaustively admits that small *T. gregaria* are difficult to separate from small *T. macrura*. In the present collection there is one specimen of *T. macrura*, 10 mm. long, that is, about the size of the largest specimen of those I refer to, *T. gregaria*. It still retains its long legs, and, in these limbs, the fifth joint is 2.6 times as long as the combined sixth and seventh. The fourth and fifth segments of the abdomen are together equal to the sixth. These proportions differ considerably from those in the specimens I have referred to *T. gregaria*.

In the figures illustrating Sars' account of this species in the "Challenger" Report, taken presumably from specimens 18 mm. long, the fifth joint of the first leg is 1.77 times as long as the combined sixth and seventh joints, and the combined fourth and fifth segments of the abdomen are 1.2 times as long as the sixth. These proportions are in close agreement with those given above.

I do not think the present specimens can be *T. vicina* Hansen, for in all that still retain the upper flagellum of the antennules, it is shorter than the distal two joints of the peduncle, whereas in *T. vicina* it is longer. Moreover, in *T. vicina* the proportions of the abdominal segments is about the same as in *T. macrura*.

I think these specimens are correctly referred to *T. gregaria*, but, owing to their poor state of preservation, the identification must remain doubtful.

## THYSANOESSA MACRURA G. O. Sars.

*T. macrura* Tattersall, 1908.

*T. macrura* Hansen, 1911.

*T. macrura* Hansen, 1913.

*Localities.*

4th January, 1914. Tow-net at 5 fathoms, twenty-two specimens, 7-12 mm.

10th January, 1914. Tow-net at 100 fathoms, 2 ♀ and 1 ♂, 22-25 mm.

Both these tow-nettings were taken during the cruise along the pack-ice westward from Adelie Land to Davis' Sea.

21st January, 1914. Lat.  $66^{\circ} 47' 21''$  S., long.  $93^{\circ} 14'$  E., off Drygalski Island, tow-net at 20 fathoms, twenty-eight specimens, 7-16 mm.

Nearly all these specimens are badly damaged, and very few retain any of the thoracic limbs. Their identity is, therefore, a matter of some doubt. In the gatherings made on 10th January, 1914, and 21st January, 1914, there are adult males and their copulatory organs on the first pair of pleopods agree with those figured by Hansen (1913) as characteristic of this species. For the remainder, I have relied on the length of the upper flagellum of the antennules (in such specimens as still retain them), which is shorter than the combined length of the last two joints of the antennular peduncle, to separate them from *T. vicina*, and the proportionate length of the last segment of the abdomen to distinguish them from *T. gregaria*.

From measurements which I have made on fifty specimens, I find that, taking the length of the last abdominal segment as unity, the combined length of the fourth and fifth segments varies between .94 and 1.06.

In the gathering made on 4th January, 1914, I found one specimen, 10 mm. long, which still retained its long legs. In this specimen, the fifth joint of the long legs was 2.6 times as long as the combined sixth and seventh joints. In the same bottle there were nine loose legs of the first pair, and measurements made on these show that the fifth segment varies from 2.12 to 2.64 times as long as the combined sixth and seventh joints. This variation, however, is one of age. In the smaller limbs the fifth joint is relatively shorter than in the larger limbs, and this joint evidently becomes more elongated as the animal grows. In adult *T. vicina*, about 12 mm. in length, the fifth joint of the long leg is about twice as long as the combined sixth and seventh joints (*vide* Hansen, 1913, plate VI, fig. 2c.). In *T. macrura*, 10 mm. the proportion is already 2.6 to 1 while, in a loose leg, which to judge from its size belonged to a specimen about 7 mm. long, the proportion is already 2.12 to 1, *i.e.*, of the proportions of adult *T. vicina*. In fully grown *T. macrura* the fifth joint of the long leg is from 3.5 to 3.8 times as long as the combined sixth and seventh joints (*vide* Tattersall, 1908, plate III, fig. 8 and Hansen, 1913, plate VI, fig. 3c.). Consideration of these measurements has led me to refer all the present specimens to *T. macrura*, and this identification is supported by the form of the first pleopods of such adult males as there happen to be present.



## ORDER MYSIDACEA.

## SUB-ORDER MYSIDA.

*Family* MYSIDAE.*Sub-family* MYSINAE.*Genus* TENAGOMYSIS *G. M. Thomson.**Tenagomysis* *G. M. Thomson, 1900.*

This genus was instituted for a species, *T. novæ-zealandiæ*, found not uncommonly on the coasts of New Zealand, but I am not aware of any subsequent records since Thomson's paper, nor of any further described species which may be referred to the genus. The species described below is very readily distinguished from the type form, though clearly referable to this genus. In view of the recent advances of our knowledge of the Mysidæ it seems desirable to re-define the genus, and to indicate its place in the family.

The genus *Tenagomysis* may be defined as follows:—Carapace rather short, leaving at least the last two thoracic segments entirely exposed, produced anteriorly into a moderate frontal plate; eyes moderately large and well developed, pigment black; antennal scale lanceolate in shape, setose all round, with a distal transverse suture near the apex; thoracic legs slender, sixth joint divided by vertical articulations into numerous subjoints (four in the type, ten to fourteen in the new species described below), seventh joint (dactylus) feeble; pleopods of the male essentially as in the genus *Leptomysis*, first pair with the endopod quite short and unjointed with the usual lateral plate, exopod long and multiarticulate; second, third, fourth, and fifth pleopods of the male well developed and biramous, the rami except in the fourth pair, subequal and without any specially modified armature; the exopod of the fourth pair longer than the endopod, with a strong spiniform and barbed seta on the outer side of each of the antepenultimate and penultimate joints; telson varying in length, its margins armed with spines, cleft at the apex, the cleft armed with closely-set pectinations, and the centre of the cleft bearing two plumose setæ; uropods rather long and slender, the exopod without a distal suture and without spines, the endopod with spines along the inner margins; female with three pairs of marsupial lamellæ (*vide* G. M. Thomson); type, *Tenagomysis novæ-zealandiæ* Thomson.

Hansen (1910) has divided the Mysidæ into six sub-families and one of these sub-families, the Mysinæ, into which *Tenagomysis* falls, is further divided up into four tribes. In all its essential features *Tenagomysis* agrees with Hansen's definition of the tribe Leptomysini, but its inclusion therein will necessitate a slight modification of the characters assigned to the tribe. This is in the number of subjoints into which the tarsus of the thoracic legs is divided. Hansen's definition runs "Sixth joint of thoracic legs [tarsus] with two, rarely three, vertical articulations and no oblique articulation." The new species described below though otherwise clearly belonging to this genus has

from ten to fourteen vertical articulations on the sixth joint of the thoracic legs, a number which has so far only been met with among the Mysini. It is obvious, therefore, that this character cannot be used as a differentiating character of the various tribes of the sub-family.

Among the genera assigned by Hansen to the tribe Leptomysini, *Tenagomysis* approaches perhaps most closely to the genus *Leptomysis*, differing only in the form of the telson. The latter, indeed will serve to distinguish the genus from all its congeners. Its general form is strikingly like that found very frequently among the Mysini, especially such genera as *Macromysis* and *Schistomysis*, with the important difference that in the latter genera there are no plumose setæ in the centre of the clefts of the telson, whereas *Tenagomysis* possesses a pair in that position. These setæ are entirely absent in the genera of the Mysini, characteristic of the Erythropini, and present in *Mysideis* and *Mysidopsis* alone of the genera belonging to the Leptomysini. *Tenagomysis* thus presents small features characteristic of three of the tribes of the sub-family Mysinae.

TENAGOMYSIS TENUIPES *sp. nov.*

(Plate XVIII, figs. 1-7.)

*Locality*.—Carnley Harbour, Auckland Islands, 24th June, 1912, one adult ♂, 21 mm.

*Description*.—General form moderately slender; *carapace* having the anterior margin produced into a triangular rostral plate which extends for about one-third of the way along the basal joint of the antennules and is shorter than the eye; rostral plate (fig. 1) about three-fifths as long as broad at its base, apex obtusely pointed; last two segments of the thorax left completely uncovered by the carapace.

*Antennular peduncle* (fig. 1) rather elongate, about as long as the sixth segment of the pleon; basal joint about as long as the second and third combined; second joint very short; third joint with a prominent spine on the dorsal anterior margin between the bases of the flagella; latter very long and slender; the basal joint has a few setæ on the outer distal corner; male appendage well developed and densely hirsute.

*Antennal peduncle* (fig. 2) not as long as the basal joint of the antennular peduncle, second joint slightly longer than the third.

*Antennal scale* (fig. 2) exceedingly long and narrow, extending for one quarter of its length beyond the distal end of the antennular peduncle, eleven times as long as broad, narrowly lanceolate in shape, setose all the way round, distal joint exceedingly small but distinctly present; the basal joint from which both the scale and peduncle spring, bears on its lower surface two strong spines, an inner and an outer, under the base of the peduncle and scale respectively.

*Thoracic legs*.—The form of the endopods of the first and second thoracic limbs is shown on plate XVIII, figs. 3 and 4. They present no special points. The basal joint



of the exopod is freely acuminate at the outer distal corner, and the flagellum-like portion is composed of nine joints. The endopods of the remaining thoracic limbs (fig. 5) are long and slender, increasing in length from the third to the seventh limbs, the endopod of the eighth limb being much shorter than that of the seventh. The sixth joint is divided into nine subjoints in the third limb, the number increasing to fourteen in the seventh limb, the eighth limb having only ten. The dactylus is feebly developed and not claw-like. The basal joint of the endopods of the third to the eighth pair of thoracic limbs bears a well-developed epipodial process.

*Abdomen*.—With the sixth segment twice as long as the fifth; first pair of pleopods of the male with the endopod short and unjointed, and having the usual lateral lamella, exopod well developed and multiarticulate; second, third, and fifth pair of pleopods in the male, well developed, biramous, the rami approximately equal and not having any modified armature; fourth pair of pleopods in the male (fig. 6) well developed, biramous, the outer ramus nearly twice longer than the inner, and having on the outer distal corner of the antepenultimate and penultimate joints, a long strong spiniform seta barbed on the distal half of their margins; the basal joint of the exopod bears a short blunt process on its lower and inner surface.

*Telson* (fig. 7) longer than the sixth abdominal segment, dorsally channelled, and therefore ventrally keeled, two and a half times as long as broad at its base, margins armed throughout their entire length by about thirty-six spines, the terminal spine of each margin rather stronger than the other spines; apex cleft, the cleft equal to about one-fifth of the total length of the telson and armed with closely set pectinations as well as with two plumose setæ at the centre, the setæ slightly longer than the cleft.

*Uropods* long and slender; inner plate one quarter longer than the telson, its inner margin armed with spines extending from the statocyst to the apex, the spines being closely set for the greater part of the margin but becoming more distantly placed and longer towards the apex, arranged more or less in series, sometimes as many as four in a series, but the serial arrangement is not regular nor obvious; the outer margin of the inner uropods bears in addition to the usual setæ a few scattered “kegelförmige” bristles; outer uropods one and a half times as long as the inner, rather slender and narrow in form.

*Length* of the type and only specimen, an adult male, 21 mm. The type has been deposited in the British Museum.

*T. tenuipes* is easily distinguished from the type and only other described species of the genus by the extreme length and tenuity of the thoracic limbs, and especially by the larger number of subjoints in the sixth joint of the endopods, by the longer and narrower antennal scale, by the longer telson and the larger number of spines arming its margins, and by the armature of the inner margin of the inner uropods. I have four undescribed species of the genus taken in New Zealand waters on the last expedition of the “Discovery.” They will be described in the Reports on that Expedition, but

they are all much smaller and more robust forms. The point to note here is that the genus is a fairly big one; and is characteristic of New Zealand waters, not having been met with in any other part of the waters of the globe.

*Genus* ANTARCTOMYSIS *Coutière*.

ANTARCTOMYSIS MAXIMA (*Hansen, M.S.*) *Holt and Tattersall*.

*Mysis maxima* Holt and Tattersall; 1906.

*Antarctomysis maxima* Coutière, 1906.

„ „ Hansen, 1908.

„ „ Tattersall, 1908.

„ „ Hansen, 1913.

*Localities.*

Station 7, 21st January, 1914; lat.  $66^{\circ} 47' 21''$  S., long.  $93^{\circ} 14'$  E., off Drygalski Island, 60 fathoms; stones, 1 ♀, 34 mm.

Station 11, 31st January, 1914; lat.  $64^{\circ} 43' 47''$  S., long.  $97^{\circ} 25' 10''$  E., 358 fathoms, mud, 1 ♂, 55 mm.

Station 12, 31st January, 1914; lat.  $64^{\circ} 39' 19''$  S., long.  $97^{\circ} 19' 21''$  E., 110 fathoms, sand and stones, 5 ♂ and 17 ♀ up to 54 mm.

Both these last two stations are in Davis Sea, off Shackleton Shelf, near to the southern end of Termination Ice Tongue.

This species has been taken by all the recent Antarctic Expeditions and has a circumpolar distribution.

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## EXPLANATION OF PLATE XVIII.

TENAGOMYSIS TENUIPES *sp. nov.*

Fig. 1.—Anterior end, to show rostral plate, antennular peduncle, antennal scale and eye.

Fig. 2.—Antennal scale and peduncle from below.

Fig. 3.—Endopod of the first thoracic limb.

Fig. 4.—Endopod of the second thoracic limb.

Fig. 5.—Endopod of the third thoracic limb.

Fig. 6.—Fourth pleopod of the male.

Fig. 7.—Telson.

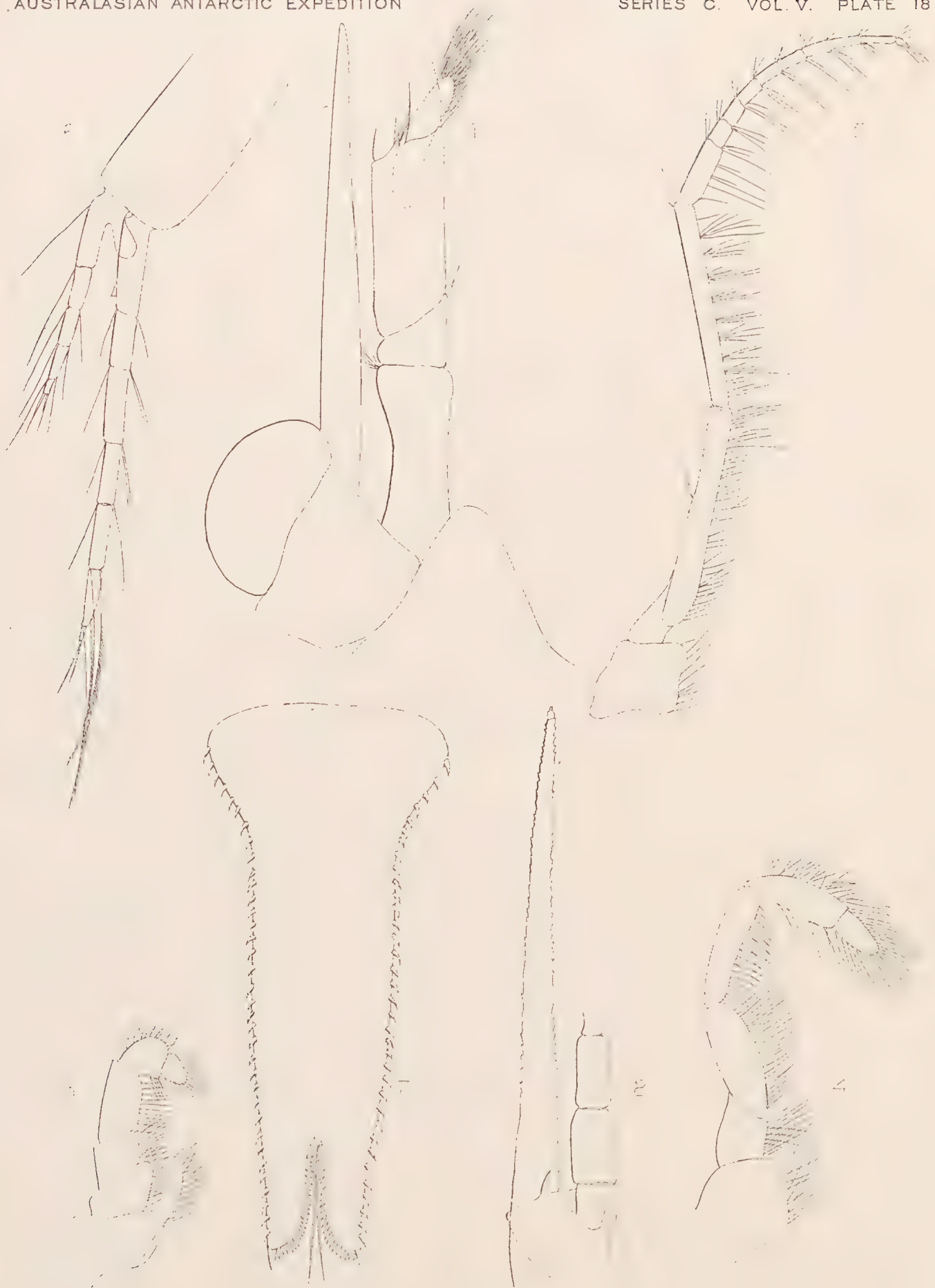
(All the figures are drawn to the same scale.)



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UNDER THE LEADERSHIP OF SIR DOUGLAS MAWSON, D.Sc., B.E.

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BY

W. T. CALMAN, D.Sc.  
(BRITISH MUSEUM, NATURAL HISTORY.)

WITH TWO PLATES.

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# CUMACEA AND PHYLLOCARIDA.

By W. T. CALMAN, D.Sc. (BRITISH MUSEUM, NATURAL HISTORY).

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(Plates XIX and XX.)

THE collection dealt with in this report, although a very small one, is by no means devoid of interest. It comprises a new species of *Diastylis*, very distinct from any hitherto known from the Antarctic, and showing some resemblance to species inhabiting the North Pacific. Another *Diastylis* is referred to a species already known, of which it represents at least a very marked variation. The remaining Cumacea and the solitary *Nebalia* serve to fill in a very wide gap in the known distribution of the respective species. All the specimens were obtained near the Main Base of the expedition at Adelie Land. The following are particulars of the localities:—

Boat Harbour, Commonwealth Bay. Dredging, 5 fathoms. 1st June, 1912.  
*Nebalia longicornis*.

Station I. Lat.  $66^{\circ} 50' S.$ , Long.  $142^{\circ} 6' E.$ ; 358 fathoms. 26th December, 1913.  
*Cyclaspis gigas*.

Station II. Lat.  $66^{\circ} 55' S.$ , Long.  $145^{\circ} 21' E.$ ; 318 fathoms. 28th December, 1913.  
*Cyclaspis gigas*, *Diastylis Mawsoni*, *D. Helleri*.

## CUMACEA.

### CYCLASPIS GIGAS Zimmer.

*Cyclaspis gigas* Zimmer, Zool. Anz. XXXI, 1907, p. 367; id. Deutsche Südpolar Exped. XIV, Zool. vi, 1913, p. 441, pl. i, figs 1–3, text-figs. 1 and 2; Stebbing, Das Tierreich, Cumacea, 1913, p. 38; Calman, Brit. Antarctic ("Terra Nova") Exped. Zool. III, No. 5, 1917, p. 146.

*Occurrence*.—Stat. I, 1 ♀; Stat. II, 3 ♀.

*Remarks*.—The ovigerous female described by Zimmer was only 15 mm. in length, but an ovigerous specimen in the present collection is 20 mm. long, and some of the immature specimens exceed 18 mm. Nevertheless the agreement with Zimmer's

description and figures is very close, almost the only noteworthy discrepancy being that the endopod of the uropods bears on its inner edge a series of spines, up to nine in number, of which only the distal one persists in the specimen figured by Zimmer. The elevated portions of the surface of the carapace are rugose. As in the specimen recorded from the "Terra Nova" Expedition I can find no trace of corneal lenses on the ocular lobe.

Zimmer has figured a young specimen (8 mm. long) smaller than the holotype of Hansen's *C. glacialis*, but agreeing with the adult in the sculpturing of the carapace. None of the specimens that I have examined show any marked difference in this character. It seems not impossible, however, that a re-examination of Hansen's type would show some trace of the separation of "Höcker 2" from "Höcker 3" (in Zimmer's terminology), which separation is, at present, the only character available for distinguishing *C. gigas* from *C. glacialis*.

*Distribution*.—Lat.  $66^{\circ} 2' S.$ , Long.  $89^{\circ} 38' E.$ ; 385 metres ("Gauss"). Lat.  $77^{\circ} 46' S.$ , Long.  $166^{\circ} 8' E.$ ; 300 fathoms ("Terra Nova").

DIASTYLIS MAWSONI, *sp.n.*

(Plate XIX.)

*Occurrence*.—Stat. II, 3 ♀.

*Description*.—Immature female; total length, 18 mm. (An ovigerous female measures 16 mm.)

Carapace inflated, about one-third of total length, its height about two-thirds and its width about three-fourths of its length. Dorsal surface strongly vaulted in its posterior third, flattened and sloping downwards anteriorly. Surface marked with ridges which, in places, pass into an irregular reticulation, partly filling up the spaces between the main ridges. The strongly convex posterior part of the dorsal surface has two very prominent longitudinal ridges converging forwards, between which is a deep depression. From these, three oblique ridges pass downwards and forwards on the side of the carapace, the most anterior defining the flattened area of the dorsal surface. The third ridge is less regular in its course than the first and second, and behind it are some irregular reticulations which partly unite to outline a fourth oblique ridge. The lower ends of the first and second oblique ridges join with a somewhat irregular horizontal ridge, which runs forward to form a lateral keel on the pseudorostrum. A second horizontal ridge between the first and the lower margin of the carapace also runs a zigzag course, and is united with the first by a short vertical ridge. The flattened area of the dorsal surface is very rugose, and on it are a pair of longitudinal ridges close together, each giving off a forwardly-curved lateral branch. The pseudorostrum is short, obtusely pointed as seen from above, with its lateral margins pectinate. There



is no antennal notch and the anterior part of the lower margin of the carapace is pectinate. The ocular lobe is minute, without trace of an eye.

The pleural plates of the second free thoracic somite are small and rounded. The postero-lateral angles of the fifth somite are rounded.

The abdomen, including the telson, is longer by about one-fourth than the cephalo-thoracic region. The somites have a dorsal median ridge and paired dorso-lateral and ventro-lateral as well as some less marked transverse ridges.

The telson is a little more than twice as long as the last somite, the post-anal portion occupying more than one-third of its length. The basal portion has a flattened dorsal surface with dentate lateral margins. The narrower post-anal portion bears five or six pairs of rather long lateral spines.

The antennules have the last segment of the peduncle slender and twice as long as the preceding.

The third maxillipeds have the basis hardly widened distally, its distal outer corner slightly produced, the merus narrower than the ischium, and with two strong teeth on its ventral surface distally.

The first legs have the basis shorter than the distal segments together, the last three segments slender, successively increasing in length. The second legs have the carpus longer by about one-third than the two distal segments together. The posterior legs are stout. The third and fourth have each a minute exopod of two segments.

The peduncle of the uropods is a little longer than the telson, with rather slender spines on inner side. The endopod is longer than the exopod, with eight to twelve spines on inner edge, the first segment nearly as long as the second and third together.

*Remarks.*—According to the very artificial system of classification adopted by Stebbing in his revision of the Cumacea (Das Tierreich, 1913), this species would probably be placed in the genus *Adiastylis*, since the post-anal portion, being less than half of the total length of the telson, can hardly be termed "long." Of the species brought together in that genus the only one having any special resemblance to *D. Mawsoni* is *A. costatus* (Bonnier), which has oblique ridges on the carapace. It differs, however, in the arrangement of these ridges, in the absence of exopods on the third and fourth legs, and in a number of other characters. A close resemblance to *D. Mawsoni* can be traced within the restricted genus *Diastylis* (as used by Stebbing) in the group of species distinguished by the presence of vestigial exopods on the third and fourth legs of the female. This group includes five species, three of which are from the Alaskan area of the North Pacific, and the others from South Georgia and the Straits of Magellan. Two of the Alaskan species, *D. Dalli* and *D. bidentata*, resemble *D. Mawsoni* further in the general pattern of the obliquely ridged carapace. In view of the well-known affinity of certain elements of the North Pacific fauna with that of the sub-antarctic

region, it is possible that this resemblance may have some significance. It is obviously undesirable, however, to attempt any large deductions from the more or less trivial indications of relationship between individual species in a genus so large and so widely distributed as *Diastylis*; and it is doubly undesirable in the case of inconspicuous organisms that have been so little collected, except in European seas, as have the Cumacea.

*DIASTYLIS HELLERI* Zimmer.

(Plate XX.)

*D. helleri*, Zimmer, Zool. Anz. XXXI, 1907, p. 221; id. Wiss. Ergeb. Schwed. Südpolar Exped. VI, Lief. 3, 1909, p. 15, pl. vi, figs. 84-96; Calman, Deuxième Expéd. Antarct. Française, Cumacés, 1917, p. 1.

*Holostylis Helleri*, Stebbing, Das Tierreich, Cumacea, 1913, p. 140.

*Occurrence*.—Stat. II. 1 ♀ (immature).

*Remarks*.—The single specimen (which is much damaged) differs considerably in appearance from Zimmer's description and figures, and from a syntype of his species in the Museum collection. It might indeed have been regarded, without much hesitation, as representing a distinct species characterised by the nodular excrescences on the carapace, were it not that certain specimens obtained on the voyage of the "Nimrod" and presented to the Museum by Sir Ernest Shackleton stand almost exactly midway, in respect of this character, between Sir Douglas Mawson's specimen and those described by Zimmer. The "Nimrod" specimens differ from that now recorded in having the surface of the carapace much more spinous, but on the other hand they agree with it and differ from Zimmer's syntype in having the pseudorostrum longer than the antennule, and the basal portion of the telson somewhat longer relatively to the post-anal portion. The single specimen which I have recorded from the second French Antarctic Expedition \* is not now at hand for comparison, but according to my notes it agreed very closely with the "Nimrod" specimens.

In describing this species, Zimmer called attention to its resemblance to the Arctic *D. spinulosa* Heller. It is, therefore, of special interest to find it presenting a series of variations parallel to those that, according to Hansen, link *D. spinulosa* with *D. nodosa* Sars.

Stebbing has removed this species to a new genus, *Holostylis*, which he makes the type of a new family *Holostylidæ*, having as its sole distinguishing character the unsegmented endopod of the uropods.

*Distribution*.—South Georgia, 12-75 metres (Swedish S. Pole Exp.). Lat. 64° 49' 35" S., Long. 63° 29' 4" W.; 70 metres ("Pourquoi Pas?"). Cape Royds, 7-50 fathoms ("Nimrod").

---

\* The text of my note on this species in the Report of the French Expedition has apparently suffered from some accident now inexplicable. I must disclaim responsibility for the statement that Dr. Zimmer himself collected the species at South Georgia and the implication that he described the specimens obtained by the "Nimrod."



## PHYLLOCARIDA.

NEBALIA LONGICORNIS *G. M. Thomson.*

*N. longicornis* G. M. Thomson, Ann. Mag. Nat. Hist. (5) IV, 1879, p. 418, pl. xix, figs. 7-9; Thiele, Wiss. Ergebn. D. Tiefsee Exp. "Valdivia" VIII, 1904, p. 9, figs. on pl. iv; id. D. Südpolar Exp. 1901-1903, IX, 1905, p. 66, pl. ii, figs. 14-17; id. National Antarctic ("Discovery") Exp. 1901-1904, Nat. Hist. III, 1907, Leptostraca p. 1, text-figs.; Calman, Brit. Antarctic ("Terra Nova") Exp. Zool. III, No. 5, 1917, p. 156.

*Occurrence.*—"Boat Harbour, Commonwealth Bay, 5 fathoms." 1 ♀.

*Remarks.*—The specimen is a female carrying eggs, and measures 6.0 mm. in length of the lateral wings of the carapace. The rostral plate has the proportion of length to breadth as 2.04:1; the ocular peduncle has a very prominent and pointed sensory tubercle; and the fourth segment of the antennule carries one spine and seven or eight setæ. The specimen therefore differs little from those already recorded from the Ross Sea area ("Discovery" and "Terra Nova") on the one hand and from Wilhelm Land ("Gauss") on the other, and, with them, would appear to conform to Thiele's definition of his subspecies *magellanica*. If this subspecies be maintained (cf. Calman, 1 c.), the present specimen may be adduced in evidence for its circumpolar distribution and for the comparative uniformity of its characters throughout its wide range.

## EXPLANATION OF PLATES.

## Plate XIX.

- Fig. 1.—*Diastylis Mawsoni*, sp.n. Immature female, from the side.  
Fig. 2.—*Diastylis Mawsoni*, sp.n. Anterior portion of body from above.  
Fig. 3.—*Diastylis Mawsoni*, sp.n. Posterior somites of abdomen, with telson and uropod.

## Plate XX.

- Fig. 4.—*Diastylis Helleri*, Zimmer. Anterior portion of body from the side. A. Syntype from South Georgia. B. Specimen from Cape Royds. C. Specimen obtained by Australasian Expedition (the outline of the carapace slightly restored).



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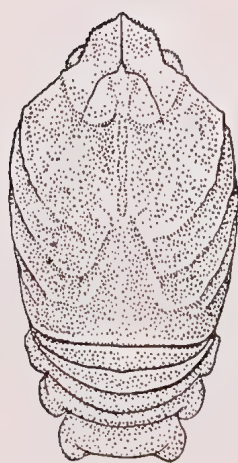
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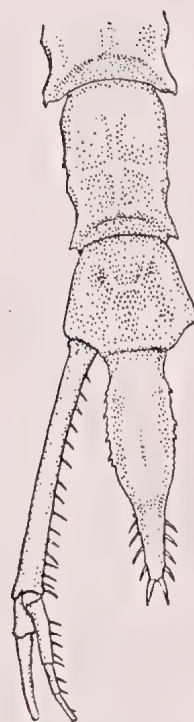




*Fig. 1.*



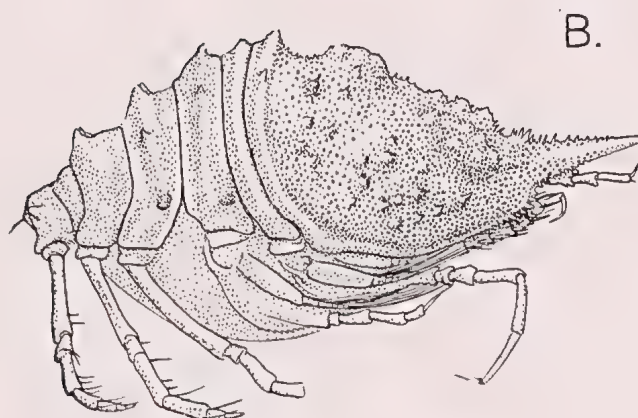
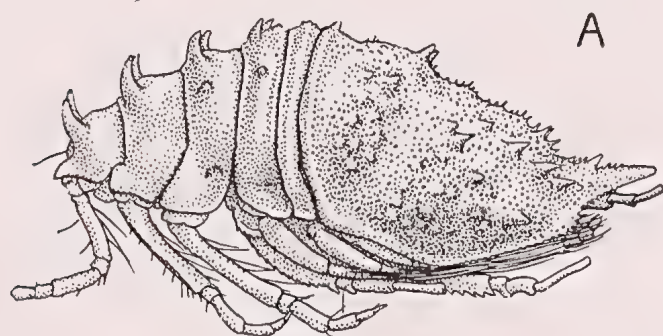
*Fig. 2.*



*Fig. 3.*

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*Fig. 4.*

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AUSTRALASIAN ANTARCTIC EXPEDITION  
1911-14.

UNDER THE LEADERSHIP OF SIR DOUGLAS MAWSON, D.Sc., B.E.

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SCIENTIFIC REPORTS.  
SERIES C.—ZOOLOGY AND BOTANY,  
VOL. V. PART 7.

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OSTRACODA

BY

FREDERICK CHAPMAN, A.L.S., F.R.M.S.  
NATIONAL MUSEUM, MELBOURNE.

WITH TWO PLATES.

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TWO PLATES.





# OSTRACODA.

FROM SOUNDINGS OBTAINED DURING THE CRUISES OF THE S.Y. "AURORA."

(PLATES XXI AND XXII.)

---

By FREDK. CHAPMAN, A.L.S., F.R.M.S. (National Museum, Melbourne).

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## INTRODUCTORY NOTE.

OUT of a total of 118 samples of soundings and dredgings submitted for detailed examination of the Foraminifera, only 27 contained Ostracoda, whilst nearly all contained Foraminifera.

The type of deposit which most frequently yielded Ostracoda is the terrigenous muds and sands, heading the list with 15 samples varying in depth from 125 to 1,320 fathoms. Globigerina Ooze comes a close second, in having 11 samples, varying in depth from 706 to 2,610 fathoms. Lastly, Diatomaceous Ooze yielded a single Ostracod (*Cythere dasyderma*) at 1,900 fathoms.

---

## SOUNDINGS IN WHICH OSTRACODA WERE FOUND.

The following are the soundings containing Ostracoda :—

ANTARCTIC SUMMER CRUISE, S.Y. "AURORA," 1911-12.

No. 11.—1st Feb., 1912. Lat.  $64^{\circ} 49'$  S., long.  $115^{\circ} 57'$  E. 930 fathoms. Mud, sand and small pebbles, with Foraminifera, Echinoid spines, and Radiolaria.

*Krithe tumida* G. S. Brady.

No. 20.—9th Feb., 1912. Lat.  $64^{\circ} 34'$  S., long.  $96^{\circ} 58\frac{1}{2}'$  E. 110 fathoms. Grey sandy and spicular mud with small stones.

*Cythere dictyon* G. S. Brady.

*Cytheropteron abyssorum* G. S. Brady.

No. 25.—13th Feb., 1912. Lat.  $65^{\circ} 5\frac{1}{4}'$  S., long.  $94^{\circ} 25'$  E. 500 fathoms. Grey mud.

*Cythere wyville-thomsoni* G. S. Brady.

No. 28.—14th Feb., 1912. Lat.  $66^{\circ} 18' S.$ , long.  $94^{\circ} 15' E.$  160 fathoms. Mud and stones.

*Argillæcia affinis* Chapman.

*Cythere cristatella* G. S. Brady.

„ *foveolata* G. S. Brady.

„ *patagoniensis* G. S. Brady.

„ *polytrema* G. S. Brady.

„ *subrufa* G. S. Brady.

*Krithe producta* G. S. Brady.

„ *tumida* G. S. Brady.

*Xestoleberis davidiana* Chapman.

*Cytherura obliqua* G. S. Brady.

No. 29.—14th Feb., 1912. Lat.  $66^{\circ} 13' S.$ , long.  $94^{\circ} 15' E.$  125 fathoms. Shelly mud and stones.

*Aglaia pusilla* G. S. Brady.

*Argillæcia badia* G. S. Brady.

*Macrocypris decora* G. S. Brady sp.

*Bairdia amygdaloides* G. S. Brady.

„ *foveolata* G. S. Brady.

*Cythere normani* G. S. Brady.

„ *wyville-thomsoni* G. S. Brady.

*Xestoleberis davidiana* Chapman.

*Cytheropteron abyssorum* G. S. Brady.

„ *assimile* G. S. Brady.

„ *umbonatum* Williamson sp., var. *acanthoptera* Marsson var.

*Pseudocythere caudata* G. O. Sars.

*Sclerochilus contortus* Norman sp.

No. 30.—15th Feb., 1912. Lat.  $66^{\circ} 21' S.$ , long.  $94^{\circ} 50' E.$  182 fathoms. Grey, sandy mud with some stones and Polyzoa.

*Argillæcia gracilior* Chapman.

*Cythere dictyon* G. S. Brady.

„ *subrufa* G. S. Brady.

*Cytheropteron armatum* Chapm. sp., var. *spinosa* var. nov.

„ *assimile* G. S. Brady.

„ *coccoides* G. S. Brady.

*Pseudocythere caudata* G. O. Sars.

*Sclerochilus lineatus* sp. nov.

*Paradoxostoma ensiforme* G. S. Brady.

*Polycope orbicularis* G. O. Sars.

No. 31.—15th Feb., 1912. Lat.  $66^{\circ} 19'$  S., long.  $95^{\circ} 57'$  E. 220 fathoms. Pale greenish mud with Polyzoa.

*Argillæcia badia* G. S. Brady.

*Bythocypris reniformis* G. S. Brady.

*Bairdia amygdaloides* G. S. Brady.

*Cythere cristatella* G. S. Brady.

„ *foveolata* G. S. Brady.

„ *obtusolata* G. S. Brady.

„ *subrufa* G. S. Brady.

„ *wyville-thomsoni* G. S. Brady.

*Xestoleberis davidiana* Chapm.

*Cytherura costellata* G. S. Brady.

„ *lilljeborgi* G. S. Brady.

*Cytheropteron assimile* G. S. Brady.

*Pseudocythere caudata* G. O. Sars.

*Sclerochilus contortus* Norman sp.

#### SUBANTARCTIC CRUISES, "AURORA," 1912 (FIRST CRUISE).

No. I.—26th May, 1912. Lat.  $44^{\circ} 12'$  S., long.  $140^{\circ} 19'$  E. 2,590 fathoms. Globigerina Ooze.

*Krithe* cf. *producta* G. S. Brady.

Additional sample. 3rd Sept., 1912. 142 miles S.W. of St. Frances Island, South Australia. 706 fathoms. Globigerina Ooze.

*Bairdia abyssicola* G. S. Brady.

„ *amygdaloides* G. S. Brady.

„ *foveolata* G. S. Brady.

*Cythere davisii* Chapm.

„ *dictyon* G. S. Brady.

„ *scabrocuneata* G. S. Brady.

*Krithe eggeri* Ch.

„ *producta* G.S.B.

*Xestoleberis davidiana* Ch.

*Cytheropteron antarcticum* Ch.



## SUBANTARCTIC CRUISE, "AURORA," 1912 (SECOND CRUISE).

No. 11.—13th Nov., 1912. Lat.  $44^{\circ} 20\frac{1}{2}'$  S., long.  $147^{\circ} 33'$  E. 1,475 fathoms.  
Globigerina Ooze.

*Bairdia abyssicola* G. S. Brady.

*Cythere dasyderma* G. S. Brady.

„ *obtusolata* G. S. Brady.

*Kriethe angusta* Brady and Norman.

No. 12.—14th Nov., 1912. Lat.  $45^{\circ} 26'$  S., long.  $147^{\circ} 26'$  E. 2,083 fathoms.  
Globigerina Ooze.

*Cythere dasyderma* G. S. Brady.

*Kriethe tumida* G. S. Brady.

No. 13.—14th Nov., 1912. Lat.  $46^{\circ} 2'$  S., long.  $147^{\circ} 30'$  E. 1,940 fathoms.  
Globigerina Ooze.

*Cythere subrufa* G. S. Brady.

„ *wyville-thomsoni* G. S. Brady.

*Kriethe tumida* G. S. Brady.

No. 40.—1st Dec., 1912. Lat.  $49^{\circ} 23\frac{1}{2}'$  S., long.  $159^{\circ} 47'$  E. 2,610 fathoms.  
Globigerina Ooze with some terrigenous sand.

*Kriethe producta* G. S. Brady.

No. 42.—5th Dec., 1912. Lat.  $48^{\circ} 19\frac{1}{2}'$  S., long.  $149^{\circ} 19'$  E. 1,076 fathoms.  
Globigerina Ooze.

*Kriethe producta* G. S. Brady.

*Cytheropteron abyssorum* G. S. Brady.

No. 56.—11th Dec., 1912. Lat.  $42^{\circ} 53'$  S., long.  $148^{\circ} 25\frac{1}{4}'$  E. 675 fathoms.  
Brown terrigenous sand with a few Sponge-spicules.

*Phlyctenophora zealandica* G. S. Brady.

*Argillæcia gracilior* Chapman.

*Kriethe producta* G. S. Brady.

„ *tumida* G. S. Brady.

No. 58.—11th Dec., 1912. Lat.  $42^{\circ} 38\frac{1}{2}'$  S., long.  $148^{\circ} 37'$  E. 1,180 fathoms.  
Pale green mud with Sponge-spicules.

*Pontocypris attenuata* G. S. Brady.

*Argillæcia affinis* Chapman.

*Macrocypris decora* G. S. Brady sp.

*Bairdia amygdaloides* G. S. Brady.

*Cythere dasyderma* G. S. Brady.



- Cythere dictyon* G. S. Brady.  
 „ *foveolata* G. S. Brady.  
 „ *kerghuelensis* G. S. Brady.  
 „ *setosa* Baird.  
 „ *wyville-thomsoni* G. S. Brady.  
*Krithe producta* G. S. Brady.  
*Xestoleberis davidiana* Chapman.  
 „ *nana* G. S. Brady.  
*Cytherura costellata* G. S. Brady.  
*Bythocythere mawsoni* sp. nov.  
*Xiphichilus arcuatus* G. S. Brady.  
*Cytherella punctata* G. S. Brady.

No. 59.—12th Dec., 1912. Lat.  $42^{\circ} 38\frac{1}{2}'$  S., long.  $148^{\circ} 41\frac{1}{2}'$  E. 1,320 fathoms. Green terrigenous mud with Sponge-spicules and Foraminifera; much decomposing matter present.

- Pontocypris attenuata* G. S. Brady.  
 „ (?) *faba* Reuss.  
*Argillæcia eburnea* G. S. Brady.  
 „ *gracilior* Chapman.  
*Macrocypris decora* G. S. Brady sp.  
 „ *similis* G. S. Brady.  
*Bairdia abyssicola* G. S. Brady.  
 „ *acanthigera* G. S. Brady.  
 „ *amygdaloides* G. S. Brady.  
*Cythere acupunctata* G. S. Brady.  
 „ *canaliculata* Reuss sp.  
 „ *cristatella* G. S. Brady.  
 „ *dasyderma* G. S. Brady.  
 „ *dictyon* G. S. Brady.  
 „ *foveolata* G. S. Brady.  
 „ *obtusolata* G. S. Brady.  
 „ *quadriaculeata* G. S. Brady.  
 „ *sabulosa* G. S. Brady.  
 „ *scintillulata* G. S. Brady.  
*Krithe producta* G. S. Brady.  
 „ *tumida* G. S. Brady.

*Loxoconcha elegantula* sp. nov.

*Xestoleberis margaritea* G. S. Brady.

„ *nana* G. S. Brady.

„ *polita* G. S. Brady.

„ *setigera* G. S. Brady.

„ *variegata* G. S. Brady.

*Cytherura costellata* G. S. Brady.

„ *cryptifera* G. S. Brady.

„ *lilljeborgi* G. S. Brady.

„ *rudis* G. S. Brady.

*Cytheropteron abyssorum* G. S. Brady.

„ *antarcticum* Chapman.

„ *assimile* G. S. Brady.

„ *wellingtoniense* G. S. Brady.

*Bythocythere ilex* sp. nov.

*Pseudocythere caudata* G. O. Sars.

*Xiphichilus complanatus* G. S. Brady.

„ *gracilis* Chapman sp.

*Cytherella irregularis* G. S. Brady var. *debilis* var. nov.

No. 60.—12th Dec., 1912. Lat. 42° 44' S., long. 148° 41' E. 1,300 fathoms. Green terrigenous mud with Sponge-spicules and Foraminifera; much decomposing matter present.

*Phlyctenophora zealandica* G. S. Brady.

*Aglaiia pusilla* G. S. Brady.

*Pontocypris attenuata* G. S. Brady.

„ *dauidiana* Chapman.

„ (?) *fabia* Reuss.

„ *simplex* G. S. Brady.

„ *trigonella* G. O. Sars.

*Argillœcia gracilior* Chapman.

*Macrocypris decora* G. S. Brady sp.

*Bairdia abyssicola* G. S. Brady.

*Bairdia* cf. *acanthigera* G. S. Brady.

*Cythere acupunctata* G. S. Brady.

„ *canaliculata* Reuss sp.

„ *crispata* G. S. Brady.

- Cythere dasyderma* G. S. Brady.  
 „ *foveolata* G. S. Brady.  
 „ *kerghuelenensis* G. S. Brady.  
 „ *lactea* G. S. Brady.  
 „ *normani* G. S. Brady.  
 „ *pyriformis* G. S. Brady.  
 „ *rastromarginata* G. S. Brady.  
 „ *scalaris* G. S. Brady.  
 „ *scintillulata* G. S. Brady.  
 „ *wyville-thomsoni* G. S. Brady.  
*Krihe producta* G. S. Brady.  
 „ *tumida* G. S. Brady.  
*Loxoconcha australis* G. S. Brady.  
*Xestoleberis davidiana* Chapman.  
 „ *nana* G. S. Brady.  
 „ *polita* G. S. Brady.  
*Cytherura* cf. *clausi* G. S. Brady.  
 „ *costellata* G. S. Brady.  
 „ *cryptifera* G. S. Brady.  
*Cytheropteron abyssorum* G. S. Brady.  
 „ *antarcticum* Chapman.  
 „ *assimile* G. S. Brady.  
*Sclerochilus contortus* Norman sp.  
*Xiphichilus gracilis* Chapman sp.  
*Polycope angulata* G. S. Brady.  
 „ *trigonalis* sp. nov.  
*Cytherella punctata* G. S. Brady.

ANTARCTIC SUMMER CRUISE, "AURORA," 1912-13.

No. 67.—29th Dec., 1912. Lat.  $47^{\circ} 28\frac{1}{2}'$  S., long.  $145^{\circ} 32'$  E. 1,670 fathoms, Globigerina Ooze.

- Cythere dasyderma* G. S. Brady.  
 „ *dictyon* G. S. Brady.  
 „ *subrufa* G. S. Brady.

No. 74.—5th Jan., 1913. Lat.  $58^{\circ} 12'$  S., long.  $146^{\circ} 47'$  E. 1,900 fathoms, Diatomaceous and spicular Ooze.

- Cythere dasyderma* G. S. Brady.

## ANTARCTIC SUMMER CRUISE, "AURORA," 1913-14.

No. 92.—22nd Nov., 1913. Lat.  $49^{\circ} 9'$  S., long.  $148^{\circ} 1'$  E. 2,400 fathoms.  
Globigerina Ooze.

*Cythere dasyderma* G. S. Brady.

„ *subrufa* G. S. Brady.

No. 110.—21st Dec., 1913. Lat.  $66^{\circ} 32'$  S., long.  $141^{\circ} 39'$  E. 157 fathoms.  
Green terrigenous mud with Sponge-spicules and Foraminifera.

*Bairdia amygdaloides* G. S. Brady.

*Cythere cristatella* G. S. Brady.

No. 111.—1st Jan., 1914. Lat.  $65^{\circ} 43'$  S., long.  $140^{\circ} 19'$  E. 205 fathoms. Sandy mud with Sponge-spicules and Diatoms.

*Cythere kerguelenensis* G. S. Brady.

„ *polytrema* G. S. Brady.

No. 127.—14th Jan., 1914. Lat.  $63^{\circ} 13\frac{1}{2}'$  S., long.  $101^{\circ} 42'$  E. 870 fathoms.  
Green mud with Diatomaceæ.

*Krithe producta* G. S. Brady.

No. 139.—27th Jan., 1914. Lat.  $65^{\circ} 53'$  S., long.  $95^{\circ} 18'$  E. 328 fathoms. Green mud with Sponge-spicules and decomposing animal matter.

*Aglaia pusilla* G. S. Brady.

*Macrocypris decora* G. S. Brady sp.

(?) *Bythocypris compressa* G. S. Brady.

*Cythere dictyon* G. S. Brady.

„ *foveolata* G. S. Brady.

„ *quadriaculeata* G. S. Brady.

*Krithe producta* G. S. Brady.

*Loxoconcha australis* G. S. Brady.

*Xestoleberis davidiana* Chapman.

*Cytherura lilljeborgi* G. S. Brady.

„ *rudis* G. S. Brady.

*Cytheropteron abyssorum* G. S. Brady.

„ *assimile* G. S. Brady.

„ *fimbriatum* Chapman.

*Sclerochilus contortus* Norman sp.

*Xiphichilus arcuatus* G. S. Brady.

*Polycope cingulata* G. S. Brady.



No. 149.—18th Feb., 1914. Lat.  $44^{\circ} 10'$  S., long.  $117^{\circ} 20'$  E. 2,600 fathoms.  
Globigerina Ooze.

*Cythere militaris* G. S. Brady sp.

No. 150.—24th Feb., 1914. Lat.  $35^{\circ} 56'$  S., long.  $134^{\circ} 14'$  E. 1,800 fathoms.  
Globigerina Ooze.

*Cythere dictyon* G. S. Brady.

„ *scabrocuneata* G. S. Brady.

*Krithe producta* G. S. Brady.

„ *tumida* G. S. Brady.

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#### GEOGRAPHICAL AREAS WHERE SAMPLES WERE OBTAINED.

##### SAMPLES FROM ANTARCTIC SUMMER CRUISE, "AURORA," 1911-12.

Nos. 11, 20, 25, 28, 29, 30, and 31 were all taken in the Southern Ocean near the Ice Barrier (Ross Sea, &c.).

##### SUBANTARCTIC CRUISE, "AURORA," 1912.

No. I (26th May, 1912) came from the south-west of Tasmania.

The additional sample (3rd September, 1912) came from 142 miles south-west of St. Frances Island, South Australia (The Great Bight).

##### SUBANTARCTIC CRUISE, "AURORA," 1912 (SECOND CRUISE) AND ANTARCTIC SUMMER CRUISE, 1912-13.

Nos. 11, 12, 13, 40, 42, 56, 58, 59, 60, 67, and 74 were dredged from an area between the south-east of Tasmania and Macquarie Island.

##### ANTARCTIC SUMMER CRUISES, "AURORA," 1913-14.

Nos. 92, 110, 111, 127, and 139 were taken near Macquarie Island, along the Ice Barrier in the terrigenous mud area.

Nos. 149 and 150 were taken south of the Great Bight and off South Australia.

## ANALYSES OF GENERA AND SPECIES.

## GENERA REPRESENTED.

The total number of species and varieties herein described or recorded is 81. These are distributed among the following genera:—*Phlyctenophora*, 1; *Aglaia*, 1; *Pontocypris*, 5; *Argillæcia*, 4; *Macrocypris*, 2; *Bythocypris*, 2; *Bairdia*, 4; *Cythere*, 24; *Krithe*, 4; *Loxoconcha*, 2; *Xestoleberis*, 5; *Cytherura*, 6; *Cytheropteron*, 8; *Bythocythere*, 2; *Pseudocythere*, 1; *Sclerochilus*, 2; *Xiphichilus*, 3; *Polycope*, 3; *Cytherella*, 2.

## NEW SPECIES AND VARIETIES.

*Loxoconcha elegantula* sp. nov.

*Cytheropteron armatum* Chapman, var. *spinosa* var. nov.

*Bythocythere ilex* sp. nov.

„ *mawsoni* sp. nov.

*Sclerochilus lineatus* sp. nov.

*Polycope trigonalis* sp. nov.

*Cytherella irregularis* G. S. Brady, var. *debilis* var. nov.

## LIST OF ABYSSAL SPECIES OF OSTRACODA FOUND IN DEPTHS EXCEEDING 500 FATHOMS.

*Phlyctenophora zealandica* G. S. Brady.

*Aglaia pusilla* G. S. Brady.

*Pontocypris attenuata* G. S. Brady.

„ *dauidiana* Chapman.

„ (?) *faba* Reuss.

„ *simplex* G. S. Brady.

„ *trigonella* G. O. Sars.

*Argillæcia affinis* Chapman.

„ *eburnea* G. S. Brady.

„ *gracilior* Chapman.

*Macrocypris decora* G. S. Brady sp.

„ *similis* G. S. Brady.

*Bairdia abyssicola* G. S. Brady.

„ *acanthigera* G. S. Brady.

„ *amygdaloides* G. S. Brady.

„ *foveolata* G. S. Brady.

*Cythere acupunctata* G. S. Brady.

- Cythere canaliculata* Reuss sp.  
„ *crispata* G. S. Brady.  
„ *cristatella* G. S. Brady.  
„ *dasyderma* G. S. Brady.  
„ *davisi* Chapman.  
„ *dictyon* G. S. Brady.  
„ *foveolata* G. S. Brady.  
„ *kerquelenensis* G. S. Brady.  
„ *lactea* G. S. Brady.  
„ *militaris* G. S. Brady sp.  
„ *normani* G. S. Brady.  
„ *obtusolata* G. S. Brady.  
„ *quadriaculeata* G. S. Brady.  
„ *rastromarginata* G. S. Brady.  
„ *sabulosa* G. S. Brady.  
„ *scabrocuneata* G. S. Brady.  
„ *scalaris* G. S. Brady.  
„ *scintillulata* G. S. Brady.  
„ *setosa* Baird.  
„ *subrufa* G. S. Brady.  
„ *wyville-thomsoni* G. S. Brady.

*Krithe augusta* Brady and Norman.

- „ *eggeri* Chapman.  
„ *producta* G. S. Brady.  
„ *tumida* G. S. Brady.

*Loxoconcha australis* G. S. Brady.

- „ *elegantula* sp. nov.

*Xestoleberis davidiana* Chapman.

- „ *nana* G. S. Brady.  
„ *polita* G. S. Brady.  
„ *setigera* G. S. Brady.  
„ *variegata* G. S. Brady.

*Cytherura* cf. *clausi* G. S. Brady.

- „ *costellata* G. S. Brady.  
„ *cryptifera* G. S. Brady.

*Cytherura lilljeborgi* G. S. Brady.

„ *rudis* G. S. Brady.

*Cytheropteron abyssorum* G. S. Brady.

„ *antarcticum* Chapman,

„ *assimile* G. S. Brady.

„ *wellingtoniense* G. S. Brady.

*Bythocythere ilex* sp. nov.

„ *mawsoni* sp. nov.

*Pseudocythere caudata* G. O. Sars.

*Sclerochilus contortus* Norman sp.

*Xiphichilus arcuatus* G. S. Brady.

„ *complanatus* G. S. Brady.

„ *gracilis* Chapman sp.

*Polycope cingulata* G. S. Brady.

„ *trigonalis* sp. nov.

*Cytherella irregularis* G. S. Brady, var. *debilis* var. nov.

„ *punctata* G. S. Brady.

LIST OF SPECIES FROM DEPTHS EXCEEDING 1,500 FATHOMS.

*Cythere dasyderma* G. S. Brady.

„ *dictyon* G. S. Brady.

„ *militaris* G. S. Brady sp.

„ *scabrocuneata* G. S. Brady.

„ *subrufa* G. S. Brady.

„ *wyville-thomsoni* G. S. Brady.

*Krithe producta* G. S. Brady.

„ *tumida* G. S. Brady.



## SYSTEMATIC DESCRIPTION.

## SUPER-ORDER OSTRACODA.

## SECTION PODOCOPA.

## FAMILY CYPRIDÆ.

*Genus* PHLYCTENOPHORA *G. S. Brady.*PHLYCTENOPHORA ZEALANDICA *G. S. Brady.*

*Phlyctenophora zealandica* *G. S. Brady*, 1880, Rep. Chall. Zool. vol. I, pt. III, p. 33, pl. III, figs. 1a-m.

*Observations.*—It is curious to find a single valve of this species in so great a depth as 1,300 fathoms. It has hitherto been taken either in the tow-net or in shallow water. The present example shows the characteristic blotches in the colouring of the valve.

Previously recorded from Wellington Harbour, New Zealand; Sydney Harbour; and Humboldt Bay, Papua.

*Occurrence.*—No. 56 (11th December, 1912), 675 fathoms. No. 60 (12th December, 1912), 1,300 fathoms.

*Genus* AGLAIA *G. S. Brady.*(?) AGLAIA PUSILLA *G. S. Brady.* Plate XXI, figs. 1, 1a.

(?) *Aglaiia pusilla* *G. S. Brady*, 1880, Rep. Chall. Zool. vol. I, pt. III, p. 34, pl. XXX, figs. 6a-d.

*Observations.*—This neat little species is represented by several separate valves in the present series, some of which vary in being more elongate.

The species was formerly known from the dredging off East Moncœur Island, Bass Strait, 38-40 fathoms.

*Occurrence.*—No. 29 (14th February, 1912), 125 fathoms. No. 60 (12th December, 1912), 1,300 fathoms. No. 139 (27th January, 1914), 328 fathoms (figured species) slender variety.

*Genus* PONTOCYPRIS *G. O. Sars.*PONTOCYPRIS ATTENUATA *G. S. Brady.*

*Pontocypris attenuata* *G. S. Brady*, 1868, Ann. Mag. Nat. Hist., ser. 4, Vol. II, p. 179, pl. IV, figs. 11-14. Idem, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 38, pl. XV, figs. 2a-d. Idem, 1890, Trans. Roy. Soc. Edin., vol. XXXV, pt. II, No. 14, p. 49, pl. I, figs. 3, 4. Chapman, 1902, Journ. Linn. Soc. Zool., vol. XXVII, p. 419. Idem, 1915, Scientific Results, "Endeavour," vol. III, pt. I, p. 34, pl. II, fig. 1.

*Observations.*—The present occurrences are remarkable for their great depths, all previous records being from shallow water, with the exception of Funafuti (200 fathoms), and East of Tasmania (700 fathoms). Those now recorded are of typical form,

and were obtained during the Subantarctic Cruise between the south-east of Tasmania and Macquarie Island. Several valves show a blunt spine at the postero-ventral angle as in Brady's figured example from the South Seas.

*Occurrence*.—No. 58 (11th December, 1912), 1,180 fathoms. No. 59 (12th December, 1912), 1,320 fathoms. No. 60 (12th December, 1912), 1,300 fathoms.

PONTOCYPRIS DAVIDIANA *Chapman*.

*Pontocypris davidiana* Chapman, 1910, Journ. Linn. Soc. Lond., Zool., vol. XXX, p. 427, pl. LVI, figs. 17a, b.

*Observations*.—This distinct species has only been observed previously at one locality, at Funafuti, Sta. 13, 1,050 fathoms. The present example is a typical right valve.

*Occurrence*.—No. 60 (12th December, 1912), 1,300 fathoms.

PONTOCYPRIS (?) FABÆ *Reuss sp.*

*Bairdia faba* Reuss, 1855, Zeitschr. d. deutsch. geol. Gesellsch., p. 278, pl. X, fig. 2.

*Pontocypris faba* Reuss sp., G. S. Brady, 1878, Trans. Zool. Soc. Lond., p. 382, pl. LXIII, figs. 6a-e.

*Pontocypris (?) faba* Reuss sp., G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 37, pl. I, figs. 4a-d.

*Pontocypris faba* Reuss sp., Egger, 1901, Abhandl. d. k. bayer. Akad. Wiss., Cl. II. vol. XVIII, pt. II, p. 420, pl. IV, figs. 44, 45.

*Pontocypris (?) faba* Reuss sp., Chapman, 1910, Journ. Linn. Soc. Lond. Zool., vol. XXX, p. 427. Idem, 1916, Shackleton Antarctic Exped., Geol., vol. II, p. 71, pl. VI, figs. 45a, b.

*Observations*.—This is another of the species hitherto found only in shallow water, with the exception of an occurrence at Funafuti in 1,050 fathoms. The present examples are from dredgings round Tasmania. It was formerly recorded from the Ross Sea by the writer, from 110 fathoms.

*Occurrence*.—No. 59 (12th December, 1912), 1,320 fathoms. No. 60 (12th December, 1912), 1,300 fathoms.

PONTOCYPRIS SIMPLEX *G. S. Brady*. Plate XXI, figs. 2, 2a.

*Pontocypris simplex* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 37, pl. I, figs. 5a-d.

*Observations*.—*P. simplex* appears to have occurred only once before, off Ascension Island, in 7 fathoms. It is here noted from the great depth of 1,300 fathoms, west of Tasmania.

One right valve.

*Occurrence*.—No. 60 (12th December, 1912), 1,300 fathoms.



PONTOCYPRIS TRIGONELLA *G. O. Sars.*

*Pontocypris trigonella* *G. O. Sars*, 1865, Oversigt af Norges Marine Ostracoder, p. 16. *G. S. Brady*, 1868, Trans. Linn. Soc. Lond., vol. XXVI, p. 387, pl. XXV, figs. 31-34; pl. XXVII, fig. 3. *Brady*, Crosskey, and *Robertson*, 1874, Mon. Post-tert. Entom. Scotland, &c. (Pal. Soc. Mon.), p. 137, pl. XVI, figs. 26-28. *G. S. Brady*, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 36, pl. XV, figs. 4a-d. *Brady* and *Norman*, 1889, Sci. Trans. Roy. Dubl. Soc., ser. II, vol. IV, No. 2, p. 109, pl. XXII, figs. 18-25, pl. XXIII, fig. 6. *Egger*, 1901, Abhandl. d. k. bayer. Akad. Wiss., Cl. II, vol. XXI, pt. II, p. 422, pl. I, figs. 16, 17. *Chapman*, 1910, Journ. Linn. Soc. Lond. Zool., vol. XXX, p. 426. *Idem*, 1915, Sci. Results "Endeavour," vol. III, pt. I, p. 35.

*Observations.*—This species seems to be more at home in the North Atlantic. The Funafuti occurrence, at a depth of 1,485 fathoms, a record for this is usually moderately shallow water species. The present occurrence however, nearly approaches it in this respect. Only a single left valve was found.

*Occurrence.*—No. 60 (12th December, 1912), 1,300 fathoms.

Genus ARGILLÆCIA *G. O. Sars.*

ARGILLÆCIA AFFINIS *Chapman*. Plate XXI, figs. 3, 3a.

*Argillæcia affinis* *Chapman*, 1902, Journ. Linn. Soc. Lond. Zool., vol. XXVIII, p. 419, pl. XXXVII, figs. 1a-c. *Idem*, 1910, *ibid.*, vol. XXX, p. 428.

*Observations.*—At Funafuti this species was found in depths varying from 1,050 to 2,715 fathoms. It differs from *A. eburnea* *G. S. Brady* in the more distinct parallelism of the upper and lower margins of the valves.

*Occurrence.*—No. 28 (14th February, 1912), 160 fathoms. No. 58 (11th December, 1912), 1,180 fathoms.

ARGILLÆCIA BADIA *G. S. Brady.*

*Argillæcia badia* *G. S. Brady*, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 40, pl. VI, figs. 3a-d. *Egger*, 1901, Abhandl. d. k. bayer. Ak. Wiss., vol. XXI, pt. II, p. 422, pl. IV, figs. 6, 7. *Chapman*, 1914, Proc. R. Soc. Vict., vol. XXVII (N.S.), pt. I, p. 28, pl. VI, fig. 1.

*Observations.*—This is a moderately deep to shallow water species, and seems to be confined to the Australian sector, having previously occurred off Queensland, W. Australia, and New South Wales. The writer obtained fossil specimens from the Janjukian of the Mallee Bores, which shows it to have been a denizen of Australian Seas in Miocene times. A single right valve was found.

*Occurrence.*—No. 31 (15th February, 1912), 200 fathoms.

ARGILLÆCIA EBURNEA *G. S. Brady.*

*Argillæcia eburnea* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 40, pl. IV, figs. 1-15. Egger, 1901, Abhandl. d. k. bayer. Ak. Wiss., vol. XXI, pt. II, p. 422, pl. IV, figs. 49-51. Chapman, 1910, Journ. Linn. Soc. Lond. Zool., vol. XXX, p. 428.

*Observations.*—This is an abundant species in the sample mentioned below. Amongst other localities it has already occurred in dredgings from Kerguelen Island, 20 to 120 fathoms and off the coast of South America in 1,900 fathoms (G. S. Brady). The Funafuti specimens were found in depths varying from 1,050 to 1,417 fathoms.

*Occurrence.*—No. 59 (12th December, 1912), 1,320 fathoms.

ARGILLÆCIA GRACILIOR *Chapman.*

*Argillæcia gracilior* Chapman, 1910, Journ. Linn. Soc. Lond. Zool., vol. XXX, p. 428, pl. LVI, figs. 18a, b. Idem, 1915, Scientific Results "Endeavour," vol. III, pt. I, p. 36.

*Observations.*—Since the occurrence of this species at Funafuti (1,050 and 1,215 fathoms) it has been found in a dredging east of Tasmania, at 777 fathoms. The samples below are from the neighbourhood of the Ice Barrier, Ross Sea, and between Tasmania and Macquarie Island.

*Occurrence.*—No. 30 (25th February, 1912), 182 fathoms. No. 56 (11th December, 1912), 675 fathoms. No. 59 (12th December, 1912), 1,320 fathoms. No. 60 (12th December, 1912), 1,300 fathoms.

Genus MACROCYPRIIS *G. S. Brady.*MACROCYPRIIS DECORA *G. S. Brady sp.*

*Cytherideis decora* G. S. Brady, 1865, Trans. Zool. Soc. Lond., vol. V, p. 366, pl. LVII, figs. 13a-c.

*Macrocypris decora* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 44, pl. I, figs. 3a-d; pl. VI, figs. 8a, b. Idem, 1890, Trans. Roy. Soc. Edin., vol. XXXV, pt. II, No. 14, p. 492. Chapman, 1914, Proc. R. Soc. Vict., vol. XXVII (N.S.), pt. I, p. 29, pl. VI, fig. 2. Idem, 1915, Scientific Results "Endeavour," vol. III, pt. I, p. 37.

*Observations.*—The present depth records are much greater than usual, the deepest sounding for this species hitherto noted being 777 fathoms, east of Tasmania.

*Occurrence.*—No. 29 (14th February, 1912), 125 fathoms. No. 58 (11th December, 1912), 1,180 fathoms. No. 59 (12th December, 1912), 1,320 fathoms. No. 60 (12th December, 1912), 1,300 fathoms. No. 139 (27th January, 1914), 328 fathoms.

MACROCYPRIIS SIMILIS *G. S. Brady.* Plate XXI, fig. 4.

*Macrocypris similis* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 42 pl. II, figs. 2a-d.



*Observations.*—It is with much interest that we meet with this rare species amongst the present soundings. It previously occurred off Pernambuco, Brazil, in 675 fathoms; off the coast of Patagonia, 160 fathoms; and off Ascension Island in 420 fathoms.

*Occurrence.*—No. 59 (12th December, 1912), 1,320 fathoms, east of Tasmania; one example.

*Genus* BYTHOCYPRIS *G. S. Brady.*

BYTHOCYPRIS BOSQUETIANA *G. S. Brady* sp.

*Bairdia bosquetiana* *G. S. Brady*, 1865, Trans. Zool. Soc. Lond., vol. V, p. 364, pl. LVII, figs. 5a-c.

*Bythocypris reniformis* *G. S. Brady*, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 46, pl. V, figs. 1a-l.

*Bythocypris bosquetiana* *G. S. Brady* sp., *Brady and Norman*, 1889, Trans. Roy. Dubl. Soc., ser. 2, vol. IV, No. II, p. 120, pl. XIV, figs. 34, 35.

*Observations.*—A single left valve of this widely distributed species occurs in a sounding close to the Ice Barrier.

*Occurrence.*—No. 31 (15th February, 1912), 220 fathoms.

(?) BYTHOCYPRIS COMPRESSA *G. S. Brady.*

(?) *Bythocypris compressa* *G. S. Brady*, 1880, Rep. Chall. Zool. vol. I, pt. III, p. 46, pl. XXXV, figs. 5a-d.

*Observations.*—The shape of the carapace recalls *B. sollasi*<sup>1</sup>, but is not so high in the middle, nor so attenuate posteriorly. It is nearest the above species, which was obtained in shallow water off Tongatabu, South Pacific. Two valves (right and left).

*Occurrence.*—No. 139 (27th January, 1914), 328 fathoms.

*Family* BAIRDIIDÆ.

*Genus* BAIRDIA *McCoy.*

BAIRDIA ABYSSICOLA *G. S. Brady*, Plate XXI, fig. 6.

*Bairdia abyssicola* *G. S. Brady*, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 52, pl. VII, figs. 4a-c.

Several well-developed valves of the above species occur. There is also an immature form which exactly resembles the adult, and therefore does not appear to support Dr. G. S. Brady's suggestion that *B. abyssicola* may be only the fully developed stage of *B. minima*<sup>2</sup>. Previously recorded in the North Pacific in 2,050 fathoms.

*Occurrence.*—Additional sample (3rd September, 1912), 706 fathoms. No. 11 (13th November, 1912), 1,475 fathoms. No. 59 (12th December, 1912), 1,320 fathoms. No. 60 (12th December, 1912), 1,300 fathoms.

<sup>1</sup>Chapman, Journ. Linn. Soc. Lond. Zool., vol. XXX, 1910, p. 428, pl. LVI, figs. 19a-c

<sup>2</sup>See Rep. Chall. Zool., vol. I, pt. III, 1880 p. 53.

BAIRDIA ACANTHIGERA *G. S. Brady.*

*Bairdia acanthigera* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 61, pl. IX, figs. 4a-c.

*Observations.*—The present is an entirely new area for this species. The specimens are typical but rare. All separate valves.

*Occurrence.*—No. 59 (12th December, 1912), 1,320 fathoms. No. 60 (12th December, 1912), 1,300 fathoms.

BAIRDIA AMYGDALOIDES *G. S. Brady.* Plate XXI, fig. 5.

*Bairdia amygdaloides* G. S. Brady, 1865, Trans. Zool. Soc. Lond., vol. V, p. 364, pl. LVII, figs. 6a-c.

*Bairdia de wattrei*, Id. 1868, Les Fonds de la Mer, p. 199, pl. XXVII, figs. 17, 18.

*Bairdia amygdaloides* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 54, pl. IX, figs. 5a-f; pl. X, figs. 2a-c. Chapman, 1910, Proc. R. Soc. Vict., vol. XXII (N.S.), pt. II, p. 307. Idem, 1914, *ibid*, p. 31, pl. VI, fig. 6. Idem, 1915, Scientific Results "Endeavour," vol. III. pt. I, p. 38.

*Observations.*—This austral form is widely distributed in the Southern hemisphere and is found fossil as far back as the Miocene. The present recorded depth of 1,320 fathoms is the deepest known for this species. The specimen from that sounding is small and thin-shelled, but otherwise typical.

*Occurrence.*—No. 31 (15th February, 1912), 220 fathoms. No. 58 (11th December, 1912), 1,180 fathoms. No. 59 (12th December, 1912), 1,320 fathoms. No. 110 (21st December, 1913), 157 fathoms.

BAIRDIA FOVEOLATA *G. S. Brady.*

*Bairdia foveolata* G. S. Brady, 1867, Les Fonds de la Mer, vol. I, p. 56, pl. VII, figs. 4-6. Idem, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 55, pl. VIII, figs. 1a-f, 2a-f. Idem, 1890, Trans. R. Soc. Edin., vol. XXXV, p. 493. Chapman, 1902, Journ. Linn. Soc. Lond. Zool., vol. XXVIII, p. 423. Idem, 1910, *ibid*, vol. XXX, p. 429.

*Observations.*—The present examples show considerable variation in outline, but are all probably referable to the above species. One of them shows a dentated antero-ventral margin. The puncta are often large and surrounded by a whitened area. An abundant species in Southern seas; also found in the Atlantic, off Cape Verde.

*Occurrence.*—No. 29 (14th February, 1912), 125 fathoms. Additional sample (3rd September, 1912), 706 fathoms;



*Family CYTHERIDÆ.**Genus CYTHERE Müller.**CYTHERE ACUPUNCTATA G. S. Brady.*

*Cythere acupunctata* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 68, pl. XI, XIV, figs. 1a, b. Chapman, 1902, Journ. Linn. Soc. Lond. Zool., vol. XXVIII, p. 424.

*Observations.*—The localities for this species are very widely separated, viz., Inland Sea, Japan (15 fathoms); Funafuti, Pacific (beach sand and 50-60 fathoms); and the present occurrence, south-west of Tasmania (1,300 and 1,320 fathoms). The example from No. 59 is very typical; those of No. 60 are almost reticulate in surface ornament.

*Occurrence.*—No. 59 (12th December, 1912), 1,320 fathoms. No. 60 (12th December, 1912), 1,300 fathoms.

*CYTHERE CANALICULATA Reuss sp.*

*Cypridina canaliculata* Reuss, 1850, in Haidinger's Abhandl., vol. III, p. 76, pl. IX, fig. 12.

*Cythere canaliculata* Reuss sp., Egger, 1858, Ostrak. der Miocän-schicht., vol. V, p. 33, pl. V, figs. 10, 11. G. S. Brady, 1865, Trans. Zool. Soc. Lond., vol. V, p. 373, pl. LIX, figs. 4a, f. Idem, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 73, pl. XIV, figs. 7 a-d. Egger, 1901, Abhandl. d. k. bayer. a.k. Wiss., vol. XXI, pt. II p. 432, pl. IV, figs. 15, 16. Chapman, 1914, Proc. R. Soc. Vict., vol. XXVII (N.S.), pt. I, p. 32, pl. VI, fig. 8. Idem, 1915, Scientific Results "Endeavour," vol. III, pt. I, p. 39.

*Observations.*—In the living condition this species appears to be restricted to Australian seas. As a fossil it occurs from Oligocene times onward in Europe, and in the Miocene of the Mallee, Victoria.

The present specimens, from the south-west coast of Tasmania are all typical valves. The depths now recorded are exceptional, as the deepest hitherto was 777 fathoms.

*Occurrence.*—No. 59 (12th December, 1912), 1,320 fathoms. No. 60 (12th December, 1912), 1,300 fathoms.

*CYTHERE CRISPATA G. S. Brady.*

*Cythere crispata* G. S. Brady, 1868, Ann. Mag. Nat. Hist., ser. 4, vol. II, p. 221, pl. XIV, figs. 14, 15. Brady, Crosskey and Robertson, 1877, Post-Tert. Entom. (Pal. Soc. Mon.), p. 146, pl. XII, figs. 52, 53; pl. XIII, figs. 12, 13. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 72, pl. XIV, figs. 8 a-d. Chapman, 1914, Proc. R. Soc. Vict., vol. XXVII (N.S.), pt. I, p. 33, pl. VI, fig. 9. Idem, 1915, Sci. Results "Endeavour," p. 40.

*Observations.*—A single left valve was found at the great depth of 1,300 fathoms, south-west of Tasmania. It has lately occurred in the Miocene of Victoria.

*Occurrence.*—No. 60 (12th December, 1912), 1,300 fathoms.

CY THERE CRISTATELLA *G. S. Brady*, Plate XXI, figs. 7, 7a.

*Cythere cristatella*, *G. S. Brady*, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 90, pl. XIX, figs. 6a-d.

*Observations.*—*C. cristatella* was formerly recorded from Booby Island, Torres Strait.

It is possible that the valve figured in Rep. Chall. Zool., vol. I, pt. III, pl. XV, figs. 7e-h, and doubtfully referred to *Cythere audei*, may belong to *C. cristatella*, as several examples closely resembling it, but showing affinities with the latter species, occur in the present series.

*Occurrence.*—No. 28 (14th February, 1912), 160 fathoms. No. 31 (15th February, 1912), 220 fathoms. No. 59 (12th December, 1912), 1,320 fathoms. No. 110 (21st December, 1913), 157 fathoms.

CY THERE DASYDERMA *G. S. Brady*.

*Cythere dasyderma* *G. S. Brady*, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 105, pl. XVII, figs. 4a-f; pl. XVIII, figs. 4a-f. Chapman, 1910, Journ. Linn. Soc. Lond. Zool., vol. XXX, p. 432. Idem, 1914, Proc. R. Soc. Vict., vol. XXVII (N.S.), pt. I, p. 34, pl. VI, fig. 10.

*Observations.*—This truly deep-sea ostracod has, curiously enough, been found fossil in Miocene beds in the Mallee bores in Victoria. Those occurring here are quite typical.

*Occurrence.*—No. 11 (13th November, 1912), 1,475 fathoms. No. 12 (14th November, 1912), 2,083 fathoms. No. 58 (11th December, 1912), 1,180 fathoms. No. 59 (12th December, 1912), 1,320 fathoms. No. 60 (12th December, 1912), 1,300 fathoms. No. 67 (29th December, 1912), 1,670 fathoms. No. 74 (5th January, 1913), 1,900 fathoms. No. 92 (22nd November, 1913), 2,400 fathoms.

CY THERE DAVISI *Chapman*.

*Cythere davis* Chapman, 1916, Brit. Ant. Exped., 1907-9, Geol., vol. II, p. 72, pl. VI, figs. 46a-c.

*Observations.*—This species belongs to the *C. wyville-thomsoni* group, and is distinguished by the rounded posterior extremity, the thicker carapace and feeble surface reticulation.

It was dredged by the "Nimrod" in 121 and 225 fathoms.

*Occurrence.*—Additional sample (3rd September, 1912), 706 fathoms.



CYTHERE DICTYON *G. S. Brady.*

*Cythere dictyon* G. S. Brady, 1880, Rep. Chall. Zool., vol. I. pt. III, p. 99, pl. XXIV, figs. 1a-y. Egger, 1901, Abhandl. d. k. bayer. Ak. Wiss., vol. XXI. pt. II, p. 442, pl. VI, figs. 41-43. Chapman, 1910, Journ. Linn. Soc. Lond. Zool., vol. XXX, p. 433. Idem, 1914, Proc. R. Soc. Vict., vol. XXVII (N.S.), pt. I, p. 34, pl. VII, figs. 12, 13. Idem, 1915, Scientific Results, "Endeavour," vol. III, pt. I, p. 41.

*Observations.*—This usually deep-water form has also lately been found as a Miocene and Lower Pliocene fossil in the Mallee, where it occurs in the marls in great abundance.

*Occurrence.*—No. 20 (9th February, 1912), 110 fathoms. No. 30 (15th February, 1912), 182 fathoms. Additional sample (3rd September, 1912), 706 fathoms. No. 58 (11th December, 1912), 1,180 fathoms. No. 59 (12th December, 1912), 1,320 fathoms. No. 67 (29th December, 1912), 1,670 fathoms. No. 139 (27th January, 1914), 328 fathoms. No. 150 (24th February, 1914), 1,800 fathoms.

CYTHERE FOVEOLATA *G. S. Brady.*

*Cythere foveolata* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 75, pl. XIII, figs. 5a-h. Chapman, 1915, Sci. Results "Endeavour," vol. I, pt. III, p. 41. Idem, 1916, Foram. and Ostrac. Elev. Dep. Ross Sea. Brit. Ant. Exped., Geol., vol. II, pp. 38, 49, pl. IV, fig. 2.

*Observations.*—This species is already established as a southern form. It is fairly common in the present series, from the Ice-barrier to Tasmania.

*Occurrence.*—No. 28 (14th February, 1912), 160 fathoms. No. 31 (15th February, 1912), 220 fathoms. No. 58 (11th December, 1912), 1,180 fathoms. No. 59 (12th December, 1912), 1,320 fathoms. No. 60 (12th December, 1912), 1,300 fathoms. No. 139 (27th January, 1914), 328 fathoms.

CYTHERE KERGUELENENSIS *G. S. Brady.*

*Cythere kerguelensis* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 78, pl. IV, figs. 16-18, pl. XX, figs. 1a-f.

*Observations.*—This species is fairly abundant, but small, in the present series. It is a southern form, ranging from the Ice-barrier to the Sydney Coast.

*Occurrence.*—No. 58 (11th December, 1912), 1,180 fathoms. No. 60 (12th December, 1912), 1,300 fathoms. No. 111 (1st January, 1914), 205 fathoms.

CYTHERE LACTEA *G. S. Brady.*

*Cythere lactea* G. S. Brady, 1865, Trans. Zool. Soc. Lond., vol. V, p. 377, pl. LX, figs. 3a-c. Idem, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 91, pl. XXII, figs. 1a-d. Chapman, 1902, Journ. Linn. Soc. Lond. Zool., vol. XXVIII, p. 426. Idem, 1914, Proc. R. Soc. Vict., vol. XXVII (N.S.), pt. I, p. 36, pl. VII, fig. 15.

*Observations.*—This species dates from the Miocene, it having occurred in the Mallee borings in Victoria. It is a widely distributed form.

*Occurrence.*—No. 60 (12th December, 1912), 1,300 fathoms. One valve.

CY THERE MILITARIS *G. S. Brady* sp. Plate XXI, fig. 8.

*Cythereis militaris* *G. S. Brady*, 1866, Trans. Zool. Soc. Lond., vol. V, p. 385, pl. LXI, figs. 9a-d.

*Cythere clavigera* *Idem*, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 109, pl. XXIII, figs. 7a-d.

*Cythere militaris* *G. S. Brady*, 1890, Trans. R. Soc. Edin., vol. XXXV, pt. II No. 14, p. 504, pl. II, figs. 24-26. Chapman, 1914, Proc. R. Soc. Vict., vol. XXVII (N.S.), pt. I, p. 37, pl. VII, fig. 18.

*Observations.*—The single valve occurring here is remarkably like that figured by the writer from the Miocene-Pliocene of the Mallee Bores. *C. militaris* is only found in the Southern hemisphere and has hitherto been noted from shallow water. The fossil occurrence is in strata which indicate deeper water subjected to current action.

*Occurrence.*—No. 149 (18th February, 1914), 2,600 fathoms.

CY THERE NORMANI *G. S. Brady*.

*Cythere normani* *G. S. Brady*, 1866, Trans. Zool. Soc. Lond., vol. V, p. 379, pl. LXI, figs. 5a-d. *Idem*, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 101, pl. XVII, figs. 3a-d; pl. XXVI, figs. 4a, b. Chapman, 1914, Proc. R. Soc. Vict., vol. XXVII (N.S.), pt. I, p. 37, pl. VII, fig. 19. *Idem*, 1916, Foram. Ostrac. Elev. Dep. Ross Sea. Brit. Ant. Exped., Geol., vol. II, pp. 50, 73, pl. VI, fig. 2.

*Observations.*—This species was not uncommon in previous soundings in the Antarctic. It dates from Miocene times in Victoria, and was also recorded by Dr. G. S. Brady from late Tertiary deposits in the Murray Flats of South Australia.

*Occurrence.*—No. 29 (14th February, 1912), 125 fathoms. No. 60 (12th December, 1912), 1,300 fathoms.

CY THERE OBTUSALATA *G. S. Brady*.

*Cythere obtusalata* *G. S. Brady*, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 91, pl. XII, figs. 1a-c. Chapman, 1902, Journ. Linn. Soc. Lond. Zool., vol. XXVIII, p. 424. *Idem*, 1914, Proc. R. Soc. Vict., vol. XXVII (N.S.), pt. I, p. 38, pl. VII, fig. 20.

*Observations.*—The present record extends the range of the species to the Antarctic Ice-barrier. It was previously known from Kerguelen Island and the Tasmanian area, as well as from West Africa, the Mauritius and the Admiralty Islands. Fossil examples were found in the Mallee Bores in Victoria, in Miocene beds.

*Occurrence.*—No. 31 (15th February, 1912), 220 fathoms. No. 11 (13th November, 1912), 1,475 fathoms. No. 59 (12th December, 1912), 1,320 fathoms.



CYTHERE PATAGONIENSIS *G. S. Brady.*

*Cythere patagoniensis* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 93, pl. XXIII, figs. 3a-d.

*Observations.*—Previously found in 175 fathoms off the coast of Patagonia.

*Occurrence.*—No. 28 (14th February, 1912), 160 fathoms.

CYTHERE POLYTREMA *G. S. Brady.*

*Cythere polytrema* G. S. Brady, 1878, Trans. Zool. Soc. Lond., vol. X, p. 393, pl. LXVI, figs. 1a-d. Idem, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 87, pl. XXI, figs. 5a-h. Chapman, 1916, Rep. on Foram. and Ostrac. Elev. Dep. Ross Sea. Brit. Ant. Exped., Geol., vol. II, p. 50, pl. VI, fig. 3.

*Observations.*—This species was originally described from fossil examples obtained from the Lower Pliocene Antwerp Crag. It has since occurred living off Prince Edward's Island, Southern Ocean, and in Pleistocene deposits, Ross Sea. Two typical valves.

*Occurrence.*—No. 28 (14th February, 1912), 160 fathoms. No. 111 (1st January, 1914), 205 fathoms.

CYTHERE QUADRIACULEATA *G. S. Brady.*

*Cythere quadriaculeata* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 86, pl. XXII, figs. 2a-d; pl. XXV, figs. 4a-d. Chapman, 1910, Journ. Linn. Soc. Lond. Zool., vol. XXX, p. 432. Idem, 1915, Sci. Res. "Endeavour," vol. III, pt. I, p. 43. Idem, 1916, Brit. Ant. Exped., Geol., vol. II, p. 73, pl. VI, fig. 47.

*Observations.*—This species, which is represented by only one valve in the present soundings off the West coast of Tasmania, was formerly recorded from the Inland Seas, Japan and off Honolulu (G. S. Brady), and from Funafuti and the East coast of Tasmania (F. Chapman).

*Occurrence.*—No. 59 (12th December, 1912), 1,320 fathoms. No. 139 (27th January, 1914), 328 fathoms.

CYTHERE RASTROMARGINATA *G. S. Brady.*

*Cythere rastromarginata* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 83, pl. XVI, figs. 1a-d, figs. 2a-d. Egger, 1901, Abhandl. d. k. bayer. Ak. Wiss., vol. XXI, pt. II, p. 442, pl. VI, figs. 5-9. Chapman, 1904, Proc. R. Soc. Vict., vol. XXVII (N.S.), pt. I, p. 40, pl. VII, fig. 24.

*Observations.*—This species has been lately recorded from fossil deposits in the Mallee, Victoria, of Miocene or Pliocene age. The living examples are widely scattered in the Australian area and the Pacific. In the present sample the specimens

from the West coast of Tasmania represented both figured examples of the Challenger report and confirm the opinion there expressed, of the occurrence of sexual differences of form.<sup>1</sup>

*Occurrence*.—No. 60 (12th December, 1912), 1,300 fathoms.

CY THERE SABULOSA *G. S. Brady.*

*Cythere sabulosa* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 80, pl. XIX, figs. 1a-h.

*Observations*.—*C. sabulosa* was previously recorded from Booby Island, Torres Strait, 6–8 fathoms. The single valve found west of Tasmania is in every way comparable in outline and surface ornament, though the latter does not show any spinous elevations, as in some “Challenger” examples.

*Occurrence*.—No. 59 (12th December, 1912), 1,320 fathoms.

CY THERE SCABROCUNEATA *G. S. Brady.*

*Cythere scabrocuneata* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 103, pl. XVII, figs. 5a-f; pl. XXIII, figs. 2a-c. Egger, 1901, Abhandl. d. k. bayer. Ak. Wiss., vol. XXI, pt. II, p. 441, pl. VIII, figs. 1-3. Chapman, 1914, Proc. R. Soc. Vict., vol. XXVII (N.S.), pt. I, p. 40, pl. VIII, fig. 25. Idem, 1915, Sci. Res. “Endeavour,” vol. III, pt. I, p. 43.

*Observations*.—The present record of depth of habitat is in excess of previous occurrences, though nearly approached by the “Endeavour” specimens from a depth of 1,122 fathoms, East of Tasmania. The species is almost confined to the Australian region and has lived on from Miocene times, as it is known from the Janjukian of the Victorian Mallee.

*Occurrence*.—Additional sample (3rd September, 1912), 706 fathoms. No. 150 (24th February, 1914), 1,800 fathoms.

CY THERE SCALARIS *G. S. Brady.*

*Cythere scalaris* G. S. Brady, 1880, Rep. Chall. Zool., vol. II, pt. III, p. 87, pl. XXI, figs. 8a-c.

*Observations*.—This species was hitherto only known from Torres Strait and Magellan Straits. The valve occurring here, in a sample from West of Tasmania is quite typical.

*Occurrence*.—No. 60 (12th December, 1912), 1,300 fathoms.

CY THERE SCINTILLULATA *G. S. Brady.*

*Cythere scintillulata* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 62, pl. XIV, figs. 3a-d. Chapman, 1914, Proc. R. Soc. Vict., vol. XXVII (N.S.), pt. I, p. 41, pl. VIII, figs. 26.

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<sup>1</sup> Op. cit., 1880, p. 83.



*Observations.*—This species also occurred in the Magellan Straits, in 55 fathoms. It has since been found fossil in Miocene to Pliocene strata in the Mallee of Victoria. The specimens here found at the great depth of 1,300 fathoms are smaller in size than usual.

*Occurrence.*—No. 59 (12th December, 1912), 1,320 fathoms. No. 60 (12th December, 1912), 1,300 fathoms.

CYTHERE SETOSA *Baird*. Plate XXI, fig. 9.

*Cythere setosa* Baird, 1850, Proc. Zool. Soc. Lond., pt. XVIII, p. 255; Annulosa, pl. XVIII, figs. 28–30. G. S. Brady, 1866, Trans. Zool. Soc. Lond., vol. V, p. 372, pl. LVIII, figs. 12a-c, 13a-d, 15a-e.

*Observations.*—It is interesting to meet with this northern and levantine species in the present sounding, East of Tasmania. The form resembles *C. kerguelenensis* Brady but is of thinner build, more tumid in form and with a finer pitted surface ornament.

*Occurrence.*—No. 58 (11th December, 1912), 1,180 fathoms.

CYTHERE SUBRUF A *G. S. Brady*.

*Cythere subrufa* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 81, pl. XX, figs. 3a-f.

*Observations.*—This species is fairly common in the samples mentioned below. Previously recorded from Balfour Bay, Kerguelen Island, and off Prince Edward's Island; it is thus confined to the Southern Ocean. Some examples closely approach *C. wyville-thomsoni* by the elevation of the ventral ridge and the tapering of the posterior extremity.

*Occurrence.*—No. 28 (14th February, 1912), 160 fathoms. No. 13 (14th November, 1912), 1,940 fathoms. No. 30 (15th February, 1912), 182 fathoms. No. 31 (15th February, 1912), 220 fathoms. No. 67 (29th December, 1912), 1,670 fathoms. No. 92 (22nd November, 1913), 2,400 fathoms.

CYTHERE WYVILLE-THOMSONI *G. S. Brady*.

*Cythere wyville-thomsoni* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 82, pl. XX, figs. 4a-f. Egger, 1901, Abhandl. d. k. bayer. Ak. Wiss., vol. XXI, pt. II, p. 444, pl. VI, figs. 13, 14. Chapman, 1902, Journ. Linn. Soc. Lond. Zool., vol. XXVIII, p. 425. Idem, 1914, Proc. R. Soc. Vict., vol. XXVII (N.S.), pt. I, p. 41, pl. VIII, fig. 28.

*Observations.*—This species has occurred at Torres Strait, at Heard and Kerguelen Islands in the Southern Ocean, and on the West Coast of Africa. It occurs fossil (Miocene) in the Mallee Bores of Victoria, and these ancient representatives are in every way typical of the species.

*Occurrence*.—No. 25 (13th February, 1912), 500 fathoms. No. 29 (14th February, 1912), 125 fathoms. No. 31 (15th February, 1912), 220 fathoms. No. 13 (14th November, 1912), 1,940 fathoms. No. 58 (11th December, 1912), 1,180 fathoms. No. 60 (12th December, 1912), 1,300 fathoms.

*Genus* KRITHE, *Brady, Crosskey and Robertson*.

KRITHE ANGUSTA *Brady and Norman*. Plate XXI, figs. 10, 10a.

*Krithe angusta*, Brady and Norman, 1889, Sci. Trans. R. Dubl. Soc., ser. 2, vol. IV, No. II, p. 181, pl. XVII, figs. 10–13.

*Krithe praelonga* Egger, 1901, Abhandl. d. k. bayer. Ak. Wiss., vol. XXI, pt. II, p. 450, pl. IV, figs. 11, 12.

*Krithe angusta* Brady and Norman, Chapman, 1910, Journ. Linn. Soc. Lond. Zool., vol. XXX, p. 434.

*Observations*.—The single right valve found in this sample is regularly narrow and smooth, with a gently incurving ventral margin. Since its original discovery in Norwegian Seas, *K. angusta* has been found at Funafuti at depths ranging between 1,050 and 2,715 fathoms, and Egger found it off Mauritius at 411 metres.

*Occurrence*.—No. 11 (13th November, 1912), 1,475 fathoms.

KRITHE EGGERI *Chapman*.

*Krithe eggeri* Chapman, 1914, Proc. R. Soc. Vict., vol. XXVII (N.S.), pt. 1, p. 42, pl. VIII, figs. 29a, b.

*Observations*.—This form was described from fossil specimens of Lower Pliocene age from the Mallee Bores in Victoria.

It has a narrow carapace seen from the side, and a conspicuously flanged anterior border.

*Occurrence*.—Additional sample (3rd September, 1912), 706 fathoms.

KRITHE PRODUCTA *G. S. Brady*.

*Krithe producta* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 114, pl. XXVII, figs. 1a–j. Brady and Norman, 1889, Sci. Trans. R. Dubl. Soc., ser. 2, vol. IV, No. II, p. 180, pl. XVII, figs. 5–7. Egger, 1901, Abhandl. d. k. bayer. Ak. Wiss., vol. XXI, pt. II, p. 451, pl. IV, figs. 17, 18. Chapman, 1902, Journ. Linn. Soc. Lond. Zool., vol. XXVIII, p. 427. Idem, 1910, *ibid*, vol. XXX, p. 434. Idem, 1915, Sci. Res. "Endeavour," vol. III, pt. I, p. 54.

*Observations*.—This deep-water form is well represented from many localities in this series of soundings. It does not appear to have been previously found so close to the ice-barrier as in samples 127 and 139.

*Occurrence*.—(?) No. I (26th May, 1912), 2,590 fathoms. Additional sample (3rd September, 1912), 706 fathoms. No. 40 (1st December, 1912), 2,610 fathoms. No. 42 (5th December, 1912), 1,076 fathoms. No. 56 (11th December, 1912), 675



fathoms. No. 58 (11th December, 1912), 1,180 fathoms. No. 59 (12th December, 1912), 1,320 fathoms. No. 60 (12th December, 1912), 1,300 fathoms. No. 127 (14th January, 1914), 870 fathoms. No. 139 (27th January, 1914), 328 fathoms. No. 150 (24th February, 1914), 1,800 fathoms.

*KRITHE TUMIDA G. S. Brady.*

*Krithe tumida* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 115, pl. XXVII, figs. 4a-d. Egger, 1901, Abhandl. d. k. bayer. Ak. Wiss., vol. XXI, pt. II, p. 451, pl. IV, figs. 19-21. Chapman, 1902, Journ. Linn. Soc. Lond. Zool., vol. XXVIII, p. 427. Idem, 1910, *ibid*, vol. XXX, p. 434.

*Observations.*—The records of this species are few and of wide distribution. "Challenger" specimens came from the South Atlantic; Egger's "Gazelle" specimens from the West coast of Australia; the "Penguin" specimens from Funafuti, South Pacific.

*Occurrence.*—No. 11 (1st February, 1912), 930 fathoms. No. 28 (14th February, 1912), 160 fathoms. No. 12 (14th November, 1912), 2,083 fathoms. No. 13 (14th November, 1912), 1,940 fathoms. No. 56 (11th December, 1912), 675 fathoms. No. 59 (12th December, 1912), 1,320 fathoms. No. 60 (12th December, 1912), 1,300 fathoms. No. 150 (24th February, 1914), 1,800 fathoms.

*Genus LOXOCONCHA G. O. Sars.*

*LOXOCONCHA AUSTRALIS G. S. Brady.*

*Loxoconcha australis* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 119, pl. XXVIII, figs. 5a-f; pl. XXIX, figs. 3a-d. Idem, 1890, Trans. R. Soc. Edin., vol. XXXV, pt. II, No. 14, p. 507. Chapman, 1902, Journ. Linn. Soc. Lond. Zool., vol. XXVIII, p. 427. Idem, 1914, Proc. R. Soc. Vict., vol. XXVII (N.S.), pt. I, p. 42, pl. VIII, fig. 30.

*Observations.*—*L. australis* is rare in the present series. It occurs in the South Pacific; round the Australian coast; and in fossil (Miocene) deposits in Victoria.

*Occurrence.*—No. 60 (12th December, 1912), 1,300 fathoms. No. 139 (27th January, 1914), 328 fathoms.

*LOXOCONCHA ELEGANTULA sp. nov.* Plate XXI, figs. 1, 1a, b.

*Description.*—Carapace tumid, roundly ovate. Seen from the side, highest anteriorly, slightly narrowing posteriorly. Anterior border depressed, rather wide, thin, and marked by marginal concentric lines; posterior margin flanged and thin, the depressed area extending to a less degree along the ventral and dorsal margins. Surface of valve strongly convex, ornamented with small but distinct excavations arranged more or less concentrically around a slight sub-median dorsal depression and becoming parallel with the ventral margin.

*Dimensions*.—Length, .44 mm; height, .27 mm; width of carapace, .28 mm.

*Observations*.—This species belongs to the "peachstone" group of *Loxoconcha*, but differs from the majority described from the Southern Ocean in having a broad anterior, narrowed behind in lateral view. It reminds one of the Cretaceous form "*Cytheropteron sherborni*"<sup>1</sup>, especially in the disposition of the surface ornament. A related form is *Loxoconcha modesta* G. S. Brady<sup>2</sup>, obtained from shallow water at Smyrna.

*Occurrence*.—No. 59 (12th December, 1912), 1,320 fathoms.

Genus *XESTOLEBERIS* G. O. Sars.

*XESTOLEBERIS DAVIDIANA* Chapman. Plate XXII, figs. 2, 2a.

*Xestoleberis* sp. nov. aff. *setigera* G. S. Brady, Chapman, 1912, Sci. Res. "Endeavour," vol. I, pt. III, p. 311.

*Xestoleberis davidiana* Chapman, 1915, Sci. Res. "Endeavour," vol. III, pt. I, p. 45. Idem, 1916, Brit. Ant. Exped., 1907-9, vol. II, pp. 51, 73, pl. VI, figs. 5a-c, 6.

*Observations*.—This species has occurred in soundings in the Ross Sea near the Ice-barrier and also in elevated deposits (Pleistocene) on the slopes of Mount Erebus. It was lately found in "Endeavour" dredgings South of Tasmania at 1,122 fathoms. The present soundings containing this species are from the South polar region and from the west of Tasmania.

*Occurrence*.—No. 28 (14th February, 1912), 160 fathoms. No. 29 (14th February, 1912), 125 fathoms. No. 31 (15th February, 1912), 220 fathoms. Additional sample (3rd September, 1912), 706 fathoms. No. 58 (11th December, 1912), 1,180 fathoms. No. 60 (12th December, 1912), 1,300 fathoms. No. 139 (27th January, 1914), 328 fathoms.

*XESTOLEBERIS NANA* G. S. Brady.

*Xestoleberis nana* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 126, pl. XXXI, figs. 5a-c. Chapman, 1902, Journ. Linn. Soc. Lond. Zool., vol. XXVIII, p. 430. Idem, 1915, Sci. Res. "Endeavour," vol. III, pt. I, p. 46.

*Observations*.—Several typical valves were found here. It has been recorded from the South Pacific (Tongatabu and Funafuti); from South of Cape Wills, South Australia, and the East of Tasmania. The present examples came from the West of Tasmania.

*Occurrence*.—No. 58 (11th December, 1912), 1,180 fathoms. No. 59 (12th December, 1912), 1,320 fathoms. No. 60 (12th December, 1912), 1,300 fathoms.

<sup>1</sup>Jones and Hinde, Mon. Pal. Soc., vol. XLIII 1890. Cretaceous Ostracoda, p. 42, pl. I, figs. 33, 34; pl. IV, figs. 20, 21.

<sup>2</sup>Trans. Zool. Soc. Lond., vol. V, 1866 (*Normania modesta*), p. 383, pl. LXI, figs. 13a, b.



*XESTOLEBERIS POLITA G. S. Brady.*

*Xestoleberis polita* G. S. Brady, 1876, Les Fondes de la Mer, vol. I, p. 202, pl. XXVII, figs. 15, 16. Idem, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 127, pl. XXXI, figs. 7a-c.

*Observations.*—*X. polita* has a limited distribution, hitherto being confined to two localities off South America (Falkland Islands and Straits of Magellan). The present specimens, from the west of Tasmania, are fairly typical.

*Occurrence.*—No. 59 (12th December, 1912), 1,320 fathoms. No. 60 (12th December, 1912), 1,300 fathoms.

*XESTOLEBERIS SETIGERA G. S. Brady.*

*Xestoleberis setigera* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 125, pl. XXXI, figs. 2a-d, figs. 3a-c. Chapman, 1902, Journ. Linn. Soc. Lond. Zool., vol. XXVIII, p. 428.

*Observations.*—Localities for this species have been hitherto confined to the colder parts of the Southern Ocean (Kerguelen, Heard and Prince Edward's Islands), excepting in the case of dredgings at Funafuti, which yielded this species at 12-60 fathoms, and also from the lagoon and beach sands at the same locality.

*Occurrence.*—No. 59 (12th December, 1912), 1,320 fathoms.

*XESTOLEBERIS VARIEGATA G. S. Brady.*

*Xestoleberis variegata* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 129, pl. XXXI, figs. 8a-g. Idem, 1890, Trans. R. Soc. Edin., vol. XXXV, p. 508. Chapman, 1902, Journ. Linn. Soc. Lond. Zool., vol. XXVIII, p. 429. Idem, 1910, *ibid*, vol. XXX, p. 435. Idem, 1914, Proc. R. Soc. Vict., vol. XXVII (N.S.), pt. I, p. 43, pl. VIII, fig. 33. Idem, 1915, Sci. Res. "Endeavour," vol. III, pt. I, p. 46.

*Observations.*—As another widely distributed form, this species has occurred off Cape Verde, off Tongatabu, at Funafuti; from New Caledonia, in the Fiji and Samoan Islands, and off South Australia. The present occurrence is west of Tasmania.

As a fossil its history dates back to the Miocene (Victoria), where these ancient specimens differ in no way from the living examples.

*Occurrence.*—No. 59 (12th December, 1912), 1,320 fathoms.

*Genus CYTHERURA G. O. Sars.*

*CYTHERURA cf. CLAUSI G. S. Brady.* Plate XXII, figs. 3, 3a.

*Cytherura clausi* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 134, pl. XXXII, figs. 8a-d.

*Observations.*—The present specimen is a left valve, partially broken away at the posterior extremity. In its general outline and surface ornament it resembles a

modification of *C. clausi*, in which the posterior elevation is greater and the antero-median area of the valve is more ruggedly pronounced in the depression and swollen prominences. The type species was recorded from Simon's Bay, South Africa.

*Occurrence*.—No. 60 (12th December, 1912), 1,300 fathoms.

*CYTHERURA COSTELLATA G. S. Brady.*

*Cytherura costellata* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 134, pl. XXXII, figs. 7a-d. Chapman, 1916, Brit. Ant. Exped. 1907-9, Geol., vol. II, p. 51, pl. VI, fig. 7.

*Observations*.—The former occurrences of this species were in shallow water soundings; Balfour Bay, Kerguelen Island, and in elevated deposits (Pleistocene) on the slopes of Mount Erebus. It is here found opposite Kaiser Wilhelm II Land and west of Tasmania.

*Occurrence*.—No. 31 (15th February, 1912), 220 fathoms. No. 58 (11th December, 1912), 1,180 fathoms. No. 59 (12th December, 1912), 1,320 fathoms.

*CYTHERURA CRYPTIFERA G. S. Brady.*

*Cytherura cryptifera* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 134, pl. XXXII, figs. 4a-c. Chapman, 1915, Sci. Res. "Endeavour," vol. III, pt. I, p. 46.

*Observations*.—First found in Bass Strait, this species has since been discovered in dredgings made by the "Endeavour," east of Tasmania, in 777 fathoms. The present examples, from west of Tasmania, are separated valves and typical in every respect.

*Occurrence*.—No. 59 (12th December, 1912), 1,320 fathoms. No. 60 (12th December, 1912), 1,300 fathoms.

*CYTHERURA LILLJEBORGI G. S. Brady.*

*Cytherura lilljeborgi* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 132, pl. XXXII, figs. 6a-d.

*Observations*.—It is interesting to note this second appearance of a rare species, known only hitherto from Balfour Bay, Kerguelen Island (20-50 fathoms). The present localities are—opposite Kaiser Wilhelm II Land (220 fathoms); opposite Adelie Land (328 fathoms); and west of Tasmania (1,320 fathoms).

*Occurrence*.—No. 31 (15th February, 1912), 220 fathoms. No. 59 (12th December, 1912), 1,320 fathoms. No. 139 (27th January, 1914), 328 fathoms.

*CYTHERURA OBLIQUA G. S. Brady.*

*Cytherura obliqua* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 131, pl. XXXII, figs. 1a-d. Chapman, 1916, Brit. Ant. Exped. 1907-9, Geol., vol. II, p. 73, pl. VI, fig. 50.



*Observations.*—The present examples came from opposite Kaiser Wilhelm II Land. The type specimens were dredged in Balfour Bay, Kerguelen Island (G. S. Brady), and others came from the Ross Sea, in 153 fathoms (F. Chapman).

*Occurrence.*—No. 28 (14th February, 1912), 160 fathoms.

*CYTHERURA RUDIS G. S. Brady.*

*Cytherura rudis* G. S. Brady, 1868, Ann. Mag. Nat. Hist., ser. 4, vol. II, p. 34, pl. V, figs. 15–17.

*Cytherura (?) rudis* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 132, pl. XXXII, figs. 3a-d.

*Cytherura rudis* Brady and Norman, 1889, Trans. R. Dubl. Soc., ser. 2, vol. IV, p. 204, pl. XVIII, figs. 10–12; pl. XIX, fig. 21. Chapman, 1916, Brit. Ant. Exped., 1907–9, Geol., vol. II, p. 74, pl. VI, fig. 51.

*Observations.*—This species has a wide distribution and also occurs in Pleistocene deposits in the United States and in Scotland. It was met with in the Ross Sea in 225 fathoms. The present localities are—west of Tasmania and off Adelie Land.

*Occurrence.*—No. 59 (12th December, 1912), 1,320 fathoms. No. 139 (27th January, 1914), 328 fathoms.

*Genus CYTHEROPTERON G. O. Sars.*

*CYTHEROPTERON ABYSSORUM G. S. Brady.*

*Cytheropteron abyssorum* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 138, pl. XXXIV, figs. 3a-d. Chapman, 1910, Journ. Linn. Soc. Lond. Zool., vol. XXX, p. 437. Idem, 1915, Sci. Res. "Endeavour," vol. III, pt. I, p. 47.

*Observations.*—This species has been found in deep sea soundings south-west of Tasmania ("Challenger") and at Funafuti ("Penguin"). Also found east of Tasmania in 777 and 1,122 fathoms ("Endeavour").

In the present samples *C. abyssorum* occurs in grey muds from the neighbourhood of the Ice-barrier and also west of Tasmania.

*Occurrence*—N. 20 (9th February, 1912), 110 fathoms. No. 29 (14th February, 1912), 125 fathoms. No. 42 (5th December, 1912), 1,076 fathoms. No. 59 (12th December, 1912), 1,320 fathoms. No. 60 (12th December, 1912), 1,300 fathoms. No. 139 (27th January, 1914), 328 fathoms.

*CYTHEROPTERON ANTARCTICUM Chapman.*

*Cytheropteron antarcticum* Chapman, 1916, Brit. Ant. Exped. 1907–9, Geol., vol. II, p. 38, pl. IV, figs. 4a, b.

*Observations.*—This species was originally described from fossil specimens in the upthrust muds of the Drygalski Glacier, south-east of Mount Larsen. The present occurrences are from a locality 142 miles south-west of St. Frances Island, South

Australia (The Great Bight), and from west of Tasmania. A related form is the recently described Lower Pliocene fossil, *C. præantarcticum* from the Mallee Bores in Victoria<sup>1</sup>; this has a heavier carapace with broader and less sharply pointed alar process.

*Occurrence*.—Additional Sample (3rd September, 1912), 706 fathoms. No. 59 (12th December, 1912), 1,320 fathoms. No. 60 (12th December, 1912), 1,300 fathoms.

CYTHEROPTERON ARMATUM *Chapman sp., var. SPINOSA nov.* Plate XXII, figs. 4, 4a.

*Description*.—In general characters this variety agrees with the type form from Funafut<sup>2</sup> with the exception that in the present example the anterior extremity is narrower, whilst the raised area between the pittings is finely spinose.

*Observations*.—Both the type form and the variety are related to *Cytheropteron pedatum* Marsson sp.<sup>3</sup> from the Chalk of England, Ireland and Rügen, and which Dr. Egger has already recorded<sup>4</sup> off Australia at 357 metres.

*Occurrence*.—No. 30 (15th February, 1912), 182 fathoms.

CYTHEROPTERON ASSIMILE *G. S. Brady.*

*Cytheropteron assimile* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 138, pl. XXXIV, figs. 3a-d. Chapman, 1902, Journ. Linn. Soc. Lond. Zool., vol. XXVIII, p. 431.

*Observations*.—This species is nearly related to *C. abyssorum*. A variety has been described from Funafuti dredgings in which the alar beak is produced into a sharp spine.

The habitat of the above species is practically confined to the Southern Ocean.

*Occurrence*.—No. 29 (14th February, 1912), 125 fathoms. No. 30 (15th February, 1912), 182 fathoms. No. 31 (15th February, 1912), 220 fathoms. No. 59 (12th December, 1912), 1,320 fathoms. No. 60 (12th December, 1912), 1,300 fathoms. No. 139 (27th January, 1914), 328 fathoms.

CYTHEROPTERON COCCOIDES *G. S. Brady.*

*Cytheropteron coccoides* G. S. Brady, 1890, Trans. R. Soc. Edin., vol. XXXV, p. 510, pl. III, figs. 20, 21. Chapman, 1915, Sci. Res. "Endeavour," vol. III, pt. I, p. 47.

*Observations*.—Previously found in sand from the fringing reef of Mango Island, Fiji, and East of Tasmania (777 fathoms). The present specimen, a complete carapace, was taken near the Ice-barrier.

*Occurrence*.—No. 30 (15th February, 1912), 182 fathoms.

<sup>1</sup>Chapman, Proc. Roy. Soc. Vict., vol. XXVII (N.S.), pt. I, 1914, p. 47, pl. IX, figs. 39a, b.

<sup>2</sup>Journ. Linn. Soc. Lond. Zool., vol. XXX, 1910 p. 432, pl. XXXVII, figs. 6a, b.

<sup>3</sup>*Cythere pedata* Marsson. Mittheil. Naturw. Ver. Neu-Pommern und Rügen, Jahrg. XII (1880), p. 46, pl. III, figs. 16a-c. *Cytheropteron pedatum* Marsson sp., Jones and Hinde, Pal. Soc. Mon., vol. XLIII, 1890, p. 38, pl. IV, figs. 33-35.

<sup>4</sup>Abhandl. d. k. bayer. Akad. Wiss., vol. XXI, pt. II, 1901, p. 462, pl. VII, figs. 10-12.



CYTHEROPTERON FIMBRIATUM *Chapman*.

*Cytheropteron fimbriatum* Chapman, 1915, Sci. Res. "Endeavour," vol. III, pt. I, p. 48, pl. III, figs. 3a, b.

*Observations*.—The single right valve found in the present soundings off Kaiser Wilhelm II Land, essentially agrees with the form described from the east of Tasmania at 777 fathoms. The valve is slightly higher than in the figured type and the extreme margin of the alar process is bordered with a series of small depressions.

*Occurrence*.—No. 139 (27th January, 1914), 328 fathoms.

CYTHEROPTERON UMBONATUM *Williamson* sp., var. ACANTHOPTERA *Marsson* var.

Plate XXII, figs. 5, 5a.

*Cythere acanthoptera* Marsson, 1880, Mitth. naturw. Neu-Vorpommern und Rügen, p. 45, pl. III, figs. 14a-c.

*Cytheropteron umbonatum* Williamson sp., var. *acanthoptera* Marsson var. Jones and Hinde, 1890, Pal. Soc. Mon., vol. XLIII p. 41, pl. I, figs. 11-13; pl. IV, figs. 22-29. Chapman, 1898, Ann. Mag. Nat. Hist., ser. 7, vol. XI, p. 342. Idem, 1900, Proc. Geol. Assoc., vol. XVI, p. 268.

*Cytheropteron acanthopteron* Marsson sp., Egger, 1901, Abhandl. d. k. bayer. Ak. Wiss., vol. XXI, pt. II, p. 460, pl. IV, figs. 46-48.

*Observations*.—It is extremely interesting to again record this Cretaceous variety as a living form. Dr. Egger's discovery of it in recent soundings was made in "Gazelle" dredgings, off Australia in 357 metres.

The present example has a well-developed boss on the dorsal area, above the dorso-median sulcus. The surface of the valve is spinose, as in the fossil examples.

*Occurrence*.—No. 29 (14th February, 1912), 125 fathoms. Off Kaiser Wilhelm II Land.

CYTHEROPTERON WELLINGTONIENSE *G. S. Brady*. Plate XXII, figs. 6, 6a.

*Cytheropteron wellingtoniense* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 136, pl. XXXIV, figs. 4a-d. Chapman, 1910, Journ. Linn. Soc. Lond. Zool., vol. XXX, p. 436.

*Observations*.—As in the specimens from Funafuti (1,050 fathoms), the present example has a more evenly rounded anterior margin.

Previously found in Wellington Harbour, New Zealand. *Occurrence*.—No. 59 (12th December, 1912), 1,320 fathoms.

Genus BYTHOCY THERE *G. O. Sars*.

BYTHOCY THERE ILEX sp. nov. Plate XXII, fig. 7, 7a.

*Description*.—Carapace elongately ovate, compressed at the extremities. Seen from the side, highest in the middle; anteriorly broad and depressed, posteriorly

attenuate. Dorsal border straight and long. Surface sloping rapidly from the region of the high alar process of the ventral, towards the antero-dorsal region. A short, spinous process in the central dorsal area. The ventral process is very pronounced. Both processes beset with numerous prickles, whilst there are a few scattered along the anterior border. General surface smooth and undulate, with two curved parallel sulci in front of the median area.

*Dimensions*.—Length, .846 mm.; height, .48 mm.; width of carapace, .65 mm.

*Observations*.—This species is nearly related to *B. tuberculata*<sup>1</sup> from Funafuti, but is anteriorly higher and does not show the dorsal tubercle of that species.

*Occurrence*.—No. 59 (12th December, 1912), 1,320 fathoms.

BYTHOCY THERE MAWSONI *sp. nov.* Plate XXII, figs. 8, 8a.

*Description*.—Carapace elongate, subovate, depressed. Seen from the side, broad anteriorly, narrowing posteriorly and ending acuminate. Dorsal border gently curved, ventral border longer and straight. Anterior margin depressed, behind which is a rounded ridge and sulcus, from which rises the median convexity of the valve, steeply towards the postero-ventral area. General surface covered with a minute, regularly polygonal pitting with raised borders to the pits.

*Dimensions*.—Length, .46 mm.; height, .23 mm.; width of carapace, .27 mm.

*Observations*.—This species links certain forms of *Bythocypris* with *Cytherura*. The oblique posterior extremity shows its greater affinity with the latter genus. In general shape it is like *B. retiolata* Chapman<sup>2</sup> from Funafuti, but differs in having an evenly sloping ventral crest and less attenuated posterior.

*Occurrence*.—No. 58 (11th December, 1912), 1,180 fathoms. Off Kaiser Wilhelm II Land.

Genus PSEUDOCY THERE *G. O. Sars.*

PSEUDOCY THERE CAUDATA *G. O. Sars.*

*Pseudocythere caudata* Sars, 1865, Oversigt Norges marine Ostrac., p. 88. G. S. Brady, 1868, Mon. Rec. Ostracoda, Trans. Linn. Soc. Lond., vol. XXVI, p. 453, pl. XXXIV, figs. 49-52; pl. XLI, fig. 6. Brady, Crosskey and Robertson, 1875, Mon. Pal. Soc., vol. XXVIII, p. 210, pl. II, fig. 9. G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 144, pl. I, fig. 6a-d. Brady and Norman, 1889, Sci. Trans. R. Dubl. Soc., ser. 2, vol. IV, p. 225. Egger, 1901, Abhandl. d. k. bayer. Ak. Wiss., vol. XXI, pt. II, p. 463, pl. VIII, figs. 33, 34. Chapman, 1910, Proc. Linn. Soc. Lond. Zool., vol. XXX, p. 438. Idem, 1915, Sci. Res. "Endeavour," vol. III, pt. I, p. 50.

<sup>1</sup> Chapman, Journ. Linn. Soc. Lond. Zool., vol. XXX, 1910, p. 437, pl. lvii, figs. 27a, b.

<sup>2</sup>Tom. supra cit., p. 437, pl. lvii, figs. 26a, b.



*Observations.*—This widely distributed species is common and typical in the present collections—ranging from the polar seas to the Tasmanian area.

*Occurrence.*—No. 29 (14th February, 1912), 125 fathoms. No. 30 (15th February, 1912), 182 fathoms. No. 31 (15th February, 1912), 220 fathoms. No. 59 (12th December, 1912), 1,320 fathoms.

*Genus* SCLEROCHILUS *G. O. Sars.*

SCLEROCHILUS CONTORTUS *Norman sp.*

*Cythere contorta* Norman, 1862, Ann. Mag. Nat. Hist., vol. IX, p. 48, pl. II, fig. 15. Trans. Tyneside Nat. F.C., vol. V, p. 150, pl. III, fig. 15.

*Sclerochilus contortus* Norman sp., Sars, 1865, Oversigt Norges marine Ostrac., p. 90. Brady, 1868, Trans. Linn. Soc. Lond., vol. XXVI, p. 455, pl. XXXIV, figs. 5-10, pl. XLI, fig. 7. Brady, Crosskey and Robertson, 1874, Mon. Pal. Soc., vol. XXVIII, p. 212, pl. X, figs. 33-35. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 147, pl. XXXV, figs. 8a, b. Brady and Norman, 1889, Trans. R. Dubl. Soc., ser. 2, vol. 4, p. 225.

*Observations.*—This species is widely scattered, its habitat embracing the North Sea, Bay of Biscay, Mediterranean and the Southern Ocean. The "Challenger" examples came from Kerguelén Island, Heard Island, and Wellington Harbour, New Zealand.

*Occurrence.*—No. 29 (14th February, 1912), 125 fathoms. No. 31 (15th February, 1912), 220 fathoms. No. 60 (12th December, 1912), 1,300 fathoms. No. 139 (27th January, 1914), 328 fathoms.

SCLEROCHILUS LINEATUS *sp. nov.* Plate XXII, figs. 9, 9a, b.

*Description.*—Carapace, long-ovate; attenuate at extremities. Seen from side, dorsal border straight in median area, obliquely truncated to anterior and concavely rounded to posterior; ventral border concave in anterior third, gently convex in lower half; anterior extremity bluntly rounded, posterior subacuminately rounded; margins depressed anteriorly and on the post-ventral edges. Surface steeply arched dorsally and gently sloping to the ventral border. Surface of valve relieved with fine and widely spaced lineation.

*Dimensions.*—Length, .856 mm.; height, .327 mm.; width of carapace, .3 mm.

*Occurrence.*—No. 30 (15th February, 1912), 182 fathoms.

*Genus* XIPHICHILUS *Brady.*

XIPHICHILUS ARCUATUS *G. S. Brady.*

(?) *Xiphichilus arcuatus* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 148, pl. XXXV, figs. 2a-d.

*Observations.*—This species has hitherto been recorded from a single “Challenger” station, in the South Pacific. It occurs here both from the Tasmanian Seas and off Kaiser Wilhelm II Land.

*Occurrence.*—No. 58 (11th December, 1912), 1,180 fathoms. No. 139 (27th January, 1914), 328 fathoms.

*XIPHICHILUS COMPLANATUS G. S. Brady.*

*Xiphichilus complanatus* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 148, pl. XXXV, figs. 4a-d.

*Xiphochilus* (misprint for *Xiphichilus*) *complanatus* Brady, Egger, 1901, Abhandl. d. k. bayer. Ak. Wiss., vol. XXI, pt. II, p. 464, pl. IV, figs. 36, 37.

*Observations.*—The “Challenger” specimens came from Kerguelen Island at 130 fathoms. Egger’s “Gazelle” specimens were obtained off the north-west coast of Australia at 357 metres.

*Occurrence.*—No. 30 (15th February, 1912), 182 fathoms. No. 59 (12th December, 1912), 1,320 fathoms.

*XIPHICHILUS GRACILIS Chapman sp.*

*Macrocypris gracilis* Chapman, 1915, Sci. Res. “Endeavour,” vol. III, pt. I, p. 37, pl. II, figs. 2a-c.

*Observations.*—In the original reference this species was referred to the genus *Macrocypris*. The narrow anterior and truncated ventral border near the posterior extremity, however, seems to point to its affinity with *Xiphichilus*.

Like the original examples, those of the present series were found in the Tasmanian area.

*Occurrence.*—No. 59 (12th December, 1912), 1,320 fathoms. No. 60 (12th December, 1912), 1,300 fathoms.



## Section MYODOCOPA.

## Family POLYCOPIDÆ.

## Genus POLYCOPE G. O. Sars.

## POLYCOPE CINGULATA G. S. Brady.

*Polycope cingulata* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 170, pl. XXXV, figs. 7a-d.

*Observations*.—The locality whence the type specimen came is lost. It is, therefore, doubly interesting to record the present examples from East of Tasmania, and off Kaiser Wilhelm II Land, Antarctic. The specimen from the latter locality has the thickened flange very conspicuously sulcated on the inside.

*Occurrence*.—No. 60 (12th December, 1912), 1,300 fathoms. No. 139 (27th January, 1914), 328 fathoms.

## POLYCOPE ORBICULARIS G. O. Sars.

*Polycope orbicularis* G. O. Sars, 1865, Oversigt af Norges marine Ostracoder, p. 122. G. S. Brady, 1868, Mon. Rec. Brit. Ostrac., Trans. Linn. Soc. Lond., vol. XXVI, p. 471, pl. XXXV, figs. 53-57. Brady, Crosskey and Robertson, Mon. Pal. Soc., vol. XXVIII, p. 219, pl. XII, figs. 22, 23. Brady, 1880, Rep. Cha. Zool., vol. I, pt. III, p. 169. Egger, 1901, Abhandl. d. k. bayer. Ak. Wiss., vol. XXI, pt. II, p. 467, pl. IV, figs. 30, 31, 40, 41.

*Observations*.—Previously recorded from Vigo Bay, Cape of Good Hope and Kerguelen Island ("Challenger"); from north-west Australia ("Gazelle"). The present locality is off Kaiser Wilhelm II Land.

*Occurrence*.—No. 30 (15th February, 1912), 182 fathoms.

POLYCOPE TRIGONALIS *sp. nov.* Plate XXII, figs. 10, 10a.

*Description*.—Carapace depressed. Valves seen laterally, semi-circular; dorsal margin straight, ventral strongly convex, equal in height and length. Surface marked by fine concentric lines and closely set pittings.

*Dimensions*.—Length, .5 mm.; height, .44 mm.; width of carapace, .3 mm.

*Observations*.—Somewhat like (?) *P. favus* Brady<sup>1</sup> in outline, but more depressed and with fine lineations and pittings.

*Occurrence*.—No. 60 (12th December, 1912), 1,300 fathoms.

<sup>1</sup> Rep. Chall. Zool., vol. I, part III, 1880, p. 170, pl. XXXVI, figs. 4a, b.

## FAMILY CYTHERELLIDÆ.

*Genus CYTHERELLA Rupert Jones.*

CYTHERELLA IRREGULARIS *G. S. Brady, var.; DEBILIS var. nov.* Plate XXII, figs. 11, 11a.

*Ref. to type.*—*Cytherella irregularis* G. S. Brady, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 178, pl. XLIII, figs. 3a-c.

*Observations.*—Three valves of what appear to be a weakly-sculptured variety of the above species occur in the Tasmanian area. The central raised portion of the valve is not so conspicuously pinched up nor is the pitting so marked, as in *C. irregularis*. The type species occurred off Bermudas.

*Occurrence.*—No. 59 (12th December, 1912), 1,320 fathoms.

CYTHERELLA PUNCTATA *G. S. Brady.*

*Cytherella punctata* G. S. Brady, 1866, Trans. Zool. Soc. Lond., vol. V, p. 362, pl. LVII, figs. 2a, b. Idem, 1880, Rep. Chall. Zool., vol. I, pt. III, p. 174, pl. XXXVI, figs. 6a, b; pl. XLIV, figs. 4a-g. Egger, 1901, Abhandl. d. k. bayer. Ak. Wiss., vol. XXI, pt. II, p. 469, pl. IV, figs. 34, 35. Chapman, 1914, Proc. R. Soc. Vict., vol. XXVII (N.S.), pt. I, p. 51, pl. IX, fig. 47.

*Observations.*—The present occurrences are from the Tasmanian area. Its range extends from the Ki Islands to the Southern Ocean, and is known also from the Straits of Magellan. It occurs as a fossil in the Miocene or Lower Pliocene of the Mallee Bores in Victoria.

*Occurrence.*—No. 58 (11th December, 1912), 1,180 fathoms. No. 60 (12th December, 1912), 1,300 fathoms.

## EXPLANATION OF PLATES.

## PLATE XXI.

- Fig. 1.—(?) *Aglaia pusilla* G. S. Brady. Right valve. 1a, edge view. No. 139, 328 fathoms.
- „ 2.—*Pontocypris simplex* G. S. Brady. Right valve. 2a, edge view. No. 60, 1,300 fathoms.
- „ 3.—*Argillæcia affinis* Chapman. Right valve. 3a, edge view. No. 58, 1,180 fathoms.
- „ 4.—*Macrocypris similis* G. S. Brady. Right valve. No. 59, 1,320 fathoms.
- „ 5.—*Bairdia amygdaloides* G. S. Brady. Left valve. No. 31, 220 fathoms.
- „ 6.—*Bairdia abyssicola* G. S. Brady. Left valve. No. 11, 1,475 fathoms.
- „ 7.—*Cythere cristatella* G. S. Brady. Right valve. 7a, edge view. No. 31, 220 fathoms.
- „ 8.—*Cythere militaris* G. S. Brady sp. Right valve. No. 449, 2,600 fathoms.
- „ 9.—*Cythere setosa* Baird. Right valve. No. 58, 1,180 fathoms.
- „ 10.—*Krithe angusta* Brady and Norman. Right valve. 10a, edge view. No. 11, 1,475 fathoms.

N.B.—All figures on this plate magnified 52 diameters.

## PLATE XXII.

- Fig. 1.—*Loxoconcha elegantula*, sp. nov. Left valve. 1a, edge view; 1b, end view. No. 59, 1,320 fathoms.
- „ 2.—*Xestoleberis davidiana* Chapman. Left valve. 2a, edge view. No. 58, 1,180 fathoms.
- „ 3.—*Cytherura* cf. *clausi* G. S. Brady. Left valve. 3a, edge view. No. 60, 1,300 fathoms.
- „ 4.—*Cytheropteron armatum* Chapman sp., var. *spinosa*, var. nov. Right valve. 4a, edge view. No. 30, 182 fathoms.
- „ 5.—*Cytheropteron umbonatum* Williamson sp. var. *acanthoptera* Marsson var. Right valve. 5a, edge view. No. 29, 125 fathoms.
- „ 6.—*Cytheropteron wellingtoniense* G. S. Brady. Left valve. 6a, edge view. No. 59, 1,320 fathoms.



- „ 7.—*Bythocythere ilex* sp. nov. Right valve. 7a, edge view. No. 59, 1,320 fathoms.
- „ 8.—*Bythocythere mawsoni* sp. nov. Left valve. 8a, edge view. No. 58, 1,180 fathoms.
- „ 9.—*Sclerochilus lineatus* sp. nov. Right valve. 9a, edge view. 9b, end view. No. 30, 182 fathoms.
- „ 10.—*Polycope trigonalis* sp. nov. Left valve. 10a, edge view. No. 60, 1,300 fathoms.
- „ 11.—*Cytherella irregularis* G. S. Brady, var *debilis* var. nov. Right valve. 11a, edge view. No. 59, 1,320 fathoms.

N.B.—All figures on this plate magnified 52 diameters, excepting figs. 11 and 11a, which are magnified 26 diameters.



# INDEX TO GENERA.

<i>Aglaia.</i>	<i>Loxoconcha.</i>
<i>Argillæcia.</i>	<i>Macrocypris.</i>
<i>Bairdia.</i>	<i>Phlyctenophora.</i>
<i>Bythocypris.</i>	<i>Polycope.</i>
<i>Bythocythere.</i>	<i>Pontocypris.</i>
<i>Cythere.</i>	<i>Pseudocythere.</i>
<i>Cytherella.</i>	<i>Sclerochilus.</i>
<i>Cytheropteron.</i>	<i>Xestoleberis.</i>
<i>Cytherura.</i>	<i>Xiphichilus.</i>
<i>Krithe</i>	

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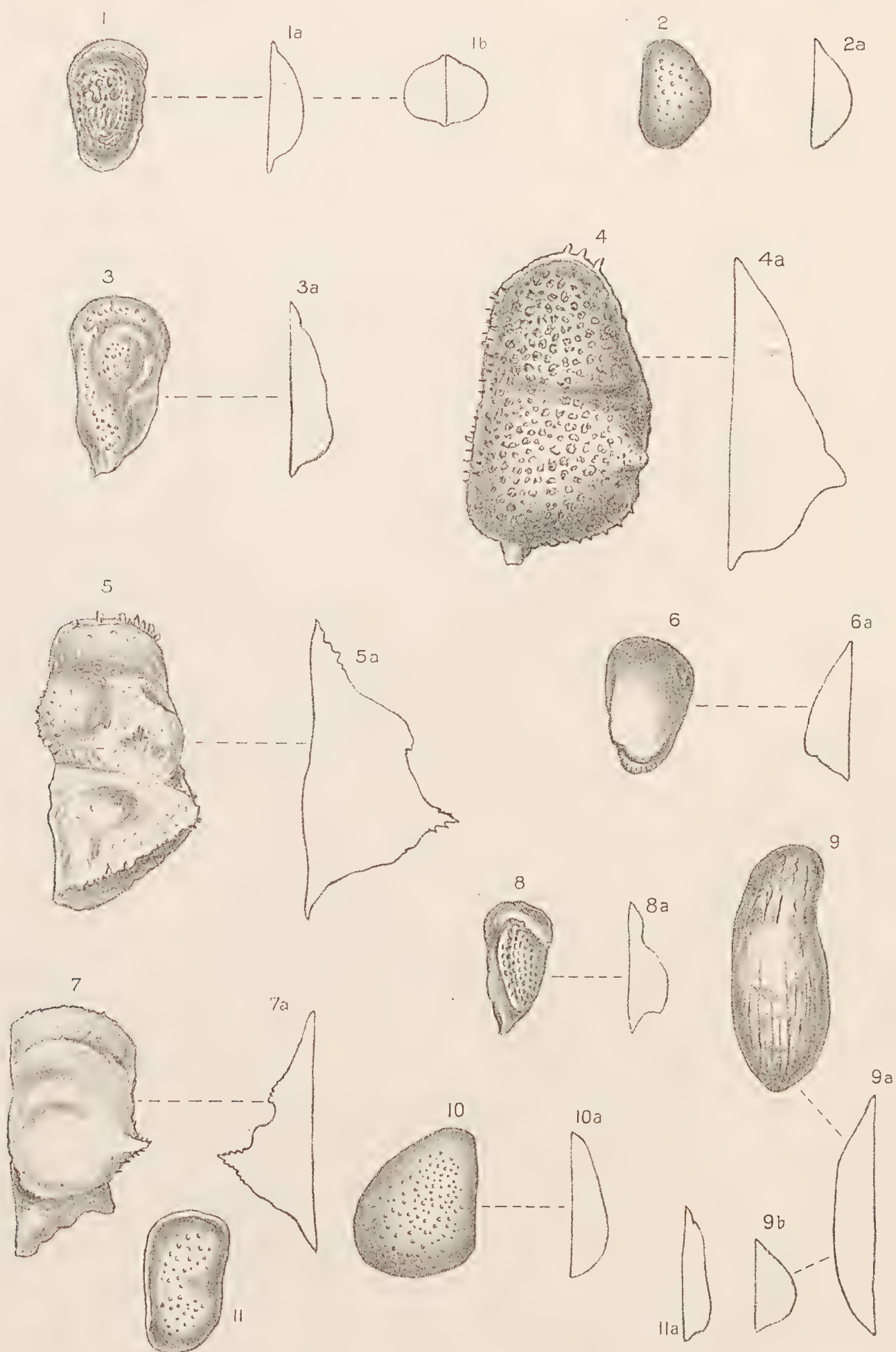
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1911-14.

UNDER THE LEADERSHIP OF SIR DOUGLAS MAWSON, D.Sc., B.E.

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SCIENTIFIC REPORTS.  
SERIES C.—ZOOLOGY AND BOTANY.  
VOL. V. PART 8.

---

THE INSECTS OF MACQUARIE ISLAND

BY

R. J. TILLYARD, M.A., D.Sc., F.L.S., F.E.S.,

WITH APPENDICES

BY

PROFESSOR C. T. BRUES, Ph.D., AND A. M. LEA, F.E.S.,

WITH TWENTY-ONE TEXT-FIGURES.

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PRICE: TWO SHILLINGS AND NINEPENCE.  
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# THE INSECTS OF MACQUARIE ISLAND.

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By R. J. TILLYARD, M.A., D.Sc., F.L.S., F.E.S.

With Appendices describing a new Hymenopteron, by Professor C. T. BRUES, Ph.D., Bussey Institute, Forest Hills, Boston, Mass., U.S.A., and a new Coleopteron, by A. M. LEA, F.E.S., Entomologist to the South Australian Museum, Adelaide, South Australia.

(With twenty-one figures in the Text.)

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## INTRODUCTION.

THE small collection of insects brought back by the Mawson Antarctic Expedition was made by Mr. H. Hamilton, Biologist to the Macquarie Island Party. All the insects were collected on Macquarie Island between May, 1912, and November, 1913. The collection was handed to me for study in February, 1917, by Professor W. A. Haswell, M.A., D.Sc., F.R.S., to whom I desire to express my best thanks for offering me the chance of working out the material collected.

For the Lent Term, 1917, I was granted leave by the Council of the Linnean Society of New South Wales to act temporarily as Lecturer and Demonstrator in Zoology in the University of Sydney, in order to fill a vacancy caused by war conditions. The opportunity was taken to work out this Antarctic material during those three months. The delay in completion of the work has been entirely due to the difficulty of getting specialists to work out some of the obscure groups represented. My best thanks are due to Professor Brues for a very excellent description of a new Diapriid, accompanied by a finely executed figure, and to Mr. Arthur M. Lea, the well-known Coleopterist, for a description of an obscure Staphylinid. These descriptions will be found in Appendices A and B of this paper respectively.

The collection also contained some obscure *Cyclorrhaphous Diptera* in the form of three species of kelp-feeding flies, which could only be satisfactorily dealt with by a recognised expert in such groups. After some delay, these were forwarded, through Professor Brues, to Mr. F. Knab, at Washington. No acknowledgment of their safe arrival came to hand from the latter gentleman; and it was not until some time later that I learnt of Mr. Knab's illness and death, which has been so great a loss to the science of entomology. Having now to face the possibility of much further delay in securing the return of these specimens, and in getting another expert to undertake the working out of the material, I have finally decided to exclude the *Diptera Cyclorrhapha* from this paper, and to put the results, which have been in my hands for some time, together into the form of a single whole for publication.



It will readily be seen that a somewhat random collection of obscure insects of the kind here represented cannot be adequately dealt with by any single entomologist, even if the material is presented to him in the best possible condition of preservation for the study of the various groups. It was clear to me from the very first that I could only deal with certain groups myself, and would have to rely on the co-operation of recognised specialists for the working out of the remainder. The Collembola appealed to me as a group in the knowledge of which much progress has been made during the past twenty years, and on which, with practically all the important literature within reach, I might reasonably venture to try my hand, though without previous experience of the somewhat special technique required. There were also some larval and pupal forms in other Orders, which I have undertaken to figure and describe, seeing that such forms do not demand that extensive knowledge of the groups to which they belong, which would be necessary as an equipment before one could deal with the corresponding imagines (not represented in the collection). I have also figured and discussed, without naming, a small species of *Psychoda* (Diptera Nemocera) found in one of the tubes, but not noted as belonging to its contents by the collector, who may be presumed to have known what was put into each tube. I think that this insect was probably floating in the liquid medium poured into the tube, and may therefore have come originally from any part of the world, or may have bred out from the ship's bilge-water. It is certainly not like any of the species of this genus known to me from Australia.

Besides this, I have, at Professor Brues's own suggestion, added some remarks about his new Diapriid, together with figures which I made before sending the insect to him. I have also given a figure to illustrate Mr. Lea's description of his new Staphylinid, and have added a short description and figures of the larva, which was found with the beetle itself on the island.

The collection contains no set or pinned specimens, but consists only of nineteen small tubes of material preserved in liquid media, some being in 4 per cent. formalin, and some in 70 per cent. alcohol. Five of the tubes were found to contain material such as mites, crustacea, egg-capsules and eggs, which could not be dealt with in this paper. Thus there remained only fourteen tubes containing insect specimens. Of these, only nine contain imagines, the rest being larvæ or pupæ.

The Orders represented are the following:—

COLLEMBOLA.—Three species.

HYMENOPTERA.—One species.

COLEOPTERA.—One species (larva and imago).

LEPIDOPTERA.—One species (larva only).

DIPTERA.—Six species, one of which is represented only by larvæ and pupæ.

In order to visualise the conditions under which this insect fauna was collected, it is only necessary to refer to the chapters on Macquarie Island in Sir D. Mawson's



magnificent volume, "The Home of the Blizzard." In this paper it will be quite sufficient to give such details of the island as will make the positions of the various collecting places quite clear, or such as bear specially upon some point of interest in connection with the actual insects collected.

Macquarie Island is situated in latitude  $54^{\circ} 37'$  South, longitude  $158^{\circ} 34'$  East. It is very hilly, the highest point rising nearly 1,500 feet above sea-level. There are no trees; but the hill-sides are clothed in dark-green tussock-grass, scattered through which are patches of the more brightly coloured Maori Cabbage (*Stilbocarpa polaris*). One of the striking features of the island is the penguin rookeries, on the sites of which the vegetation becomes completely destroyed. Some of the insects in the collection were taken from under stones in these rookeries. Another feature of the island is the immense masses of kelp which are cast ashore after every burst of heavy weather. In the rotting kelp, various species of Diptera breed; and their larvæ form the principal diet of the introduced Maori Hens or Wekas.

The Expedition Hut of the Macquarie Island Party was situated on the lee side (east) of a small peninsula, which forms the extreme northern end of the island, and is known as the North Head Peninsula. This peninsula is about three-quarters of a mile long by one-quarter of a mile wide, and is connected with the main portion of the island by a sandy spit, uncovered except during very heavy weather. The wireless station was erected on the top of this peninsula.

The following are the positions of the various localities mentioned in the notes written on slips of paper by the collector, and wrapped around each separate tube of specimens:—

"North End" refers to the vicinity of the Hut.

"West Point" is at the north-west extremity of the island.

"Aerial Cove" lies directly below the wireless station, on the western side of Wireless Hill.

"Garden Bay" is not mentioned in Mawson's book. But, as the only Victoria Penguin rookery mentioned therein was close to the hut, and as an attempt to grow vegetables was made in the same vicinity, it is fairly certain that the name given by the collector, in association with a rookery of the species of penguin mentioned above, must have been quite close to the hut.

Owing to the methods of preservation, and the long time that has elapsed since the specimens were collected, the material is not, for the most part, in a very satisfactory state for detailed study. This applies especially to the Collembola, in many of which the delicate cuticle has become more or less detached from the underlying parts, rendering the task of determining the form of the ocellar groups and the post-antennal organ a very difficult one. For these specimens I tried three methods of study. Firstly the specimens were very carefully washed, passed up through ascending grades of alcohol,

and finally cleared in clove oil. They were then mounted in the usual way in Canada balsam. Some good results were obtained by this method. A further batch of specimens was macerated in caustic potash, until all the parts had been removed except the cuticle. The latter was then carefully washed, and treated in the same way as the entire insects of the first batch. This method gives excellent results in the study of the ocelli and other minute organs in the larvæ of Neuroptera, but it yielded only poor results with these Collembola, in which the cuticle was much more delicate. Finally, a third batch of specimens was taken and treated with a weak solution of calcium hypochlorite, the bleaching being expedited by the addition of a drop or two of weak hydrochloric acid. The bleached specimens were then allowed to dry off slowly, and were examined *in situ*. By this method the grouping of the ocelli became visible, together with the post-antennal organ, when present.

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#### SPECIES ALREADY DESCRIBED FROM MACQUARIE ISLAND.

Although Macquarie Island has been visited by several scientific expeditions, very few insects appear to have been collected there, or, at any rate, few have been described. In November, 1907, the New Zealand Government steamer "Hinemoa" visited the Auckland and Campbell Islands, and landed scientific parties on both groups. Macquarie Island does not seem to have been visited; but, in the excellent publication subsequently issued by the New Zealand Government, entitled "The Sub-antarctic Islands of New Zealand," and based mainly upon the results obtained by these parties of scientists, the authors who have dealt with the various Orders of Insects have included a few from Macquarie Island, so as to make the survey approach as nearly as possible in extent to the demand implied in the title of the book. Thus this publication, issued in 1909, includes all the insects known from the sub-antarctic islands of New Zealand up to that time; and I am not able to trace any new species described from them since. It is necessary to take into account the insects described from all these islands; for, although Macquarie Island lies almost twice as far to the south of New Zealand as do the other groups, yet the possibility of some of the same, or very closely allied, species occurring there is very considerable.

In Vol. I of the above-named publication, the following species are described from Macquarie Island:—

*Order* : COLLEMBOLA.

*Family* : PODURIDÆ.

(1) ACHORUTES VIATICUS TULLBERG.

"On some Sub-antarctic Collembola." Article xvii, by Professor G. H. Carpenter.  
(4\*, p. 377.)

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\* References to the Bibliography on p. 377, are printed in heavy type.



*Order :* DIPTERA.

*Family :* DOLICHOPODIDÆ.

(2) SCHÆNOPHILUS PEDESTRIS, *Lamb.*

“The Diptera of the Sub-antarctic Islands of New Zealand.” Article vii (8, p. 132).  
(Type in the Cambridge Museum, England.)

*Family :* PHYCODROMIDÆ.

(3) CÆLOPA NIGRIFRONS, *Lamb.*

Op. cit. (8, p. 140). (Type in Cambridge Collection.)

## DESCRIPTIONS OF THE INSECTS IN THE COLLECTION.

*Order :* COLLEMBOLA.

*Sub-order :* ARTHROPLEONA.

*Family :* PODURIDÆ.

*Genus :* ACHORUTES,† *Templeton.*

Numerous specimens of a small blue-black species belonging to this genus are present in the Collection. As Professor Carpenter has already recorded the common occurrence on Macquarie Island of the well-known and almost world-wide species *A. viaticus*, Tullberg, it seemed highly probable that the specimens here present belonged to the same species. There was, however, the possibility of an allied species of the same genus also occurring on the Island, either in company with the recorded species, or in some different habitat or locality. I therefore studied a considerable number of specimens, and compared my results with those obtained by Professor Carpenter. The conclusion I have come to is that the species here represented is the same as that studied by him. In most of the specimens studied by me, the anal papillæ are somewhat more elongated than in the figure given by Professor Carpenter (4, p. 378); but this may only be due to the poor state of preservation of the specimens, most of which have the cuticle standing well away from the underlying tissues. My drawings of the post-antennal organ, ocelli, claw, and empodium, and of the dens and mucro of the spring, agree very closely with those of Professor Carpenter, as may be seen by comparing Text-fig. 1, *a-d*, with his figures already referred to.

† I have followed Carpenter in refusing to recognise Börner's transference (1906) of this well-known name of seventy year's standing, to that hitherto universally known as *Anoura* or *Neanura*. It is high time that a system of *nomina conservanda* should be adopted which should be inviolate from these termitic attacks,

*ACHORUTES VIATICUS, Tullberg.*

(Text-fig. 1.)

Numerous specimens of this almost cosmopolitan species are present in the Collection, in an unnumbered tube.

Collector's note:—"Collembola common on decaying animal and vegetable matter. Macquarie Island." No dates given.

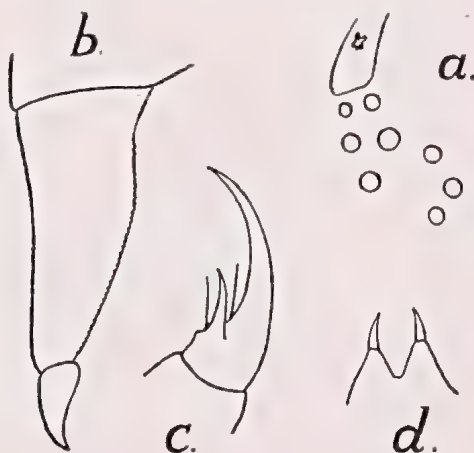


Fig. 1.—*Achorutes viaticus*, Tullberg.

(a) Post-antennal organ and group of ocelli. (b) Dens and mucro of spring. (c) Claw and empodial appendage of hind foot. (d) Anal papillæ. (All  $\times 330$ .)

A number of these specimens have been mounted on a slide numbered AAE. 11, and placed in the Australian Museum, Sydney. Others have been put into Tube No. C. 43 (from which other species originally contained in it have been removed), and have also been placed in the Australian Museum. It is of interest to note that this species has also been taken in Tierra del Fuego.

*Family* : ENTOMOBRYIDÆ.

*Genus* : ENTOMOBRYA, *Rondani*.

= *Degeeria* auct.

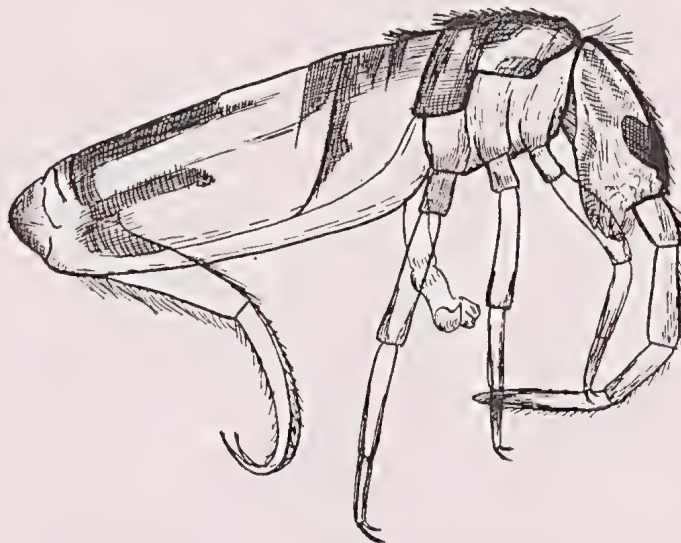
This widely distributed genus is easily recognised by the great extent of the fourth segment of the abdomen, the absence of scales, and the presence of a single tenent hair on each foot. A few specimens of a single species from Macquarie Island are present in the Collection. This species appears to be new, and is described herewith.



ENTOMOBRYA MAWSONI, *n.sp.*

(Text-figs. 2-5.)

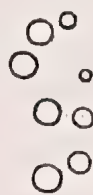
*Total length* of full-grown specimens, 2.5 mm., omitting antennæ and spring.  
*Depth of abdomen* at its greatest, 0.6 mm.

Fig. 2.—*Entomobrya mawsoni* n.sp. Lateral view. ( $\times 34$ .)

Head depressed, narrow, somewhat elongated, the ocelli situated on two very conspicuous patches of black pigment.

*Antennæ* 1.5 mm. long, the terminal joint 0.5 mm. long; very slender, clothed with minute hairs, and with a few long, slender, scattered hairs on the two basal joints (No post-antennal organ present.)

*Ocelli*, eight on each side, arranged as shown in Text-fig. 3. Four of these ocelli are large, three of medium size, and a single one is very small and difficult to locate.

Fig. 3.—*Entomobrya mawsoni* n. sp. Group of ocelli. ( $\times 200$ .)

Thorax, with the mesonotum almost continuous with the head, quite covering the small prothorax, but not overhanging the head. Sides of the meso- and metanotum slightly overhanging the bases of the coxæ.

*Legs*.—Fairly long and slender, with the tarsal claw and empodium well developed; the former with the vestige of a single tooth midway along its inner edge.

*Tenent hair* longer than claw, as shown in Text-fig. 4.



Fig. 4.—*Entomobrya mawsoni* n.sp. Claw, empodial appendage and tenent hair of hind foot. ( $\times 368$ .)

*Abdomen* with the first three segments short, partially fused, the fourth very long, and fairly distinctly separated off from the rest, the terminal segments very short.

*Spring*, 1.6 mm. long, the manubrium and dentes each about 0.7 mm. long, the mucrones  $28\ \mu$  long. In the dead specimens, the dentes are usually much curved, as shown in Text-fig. 2.

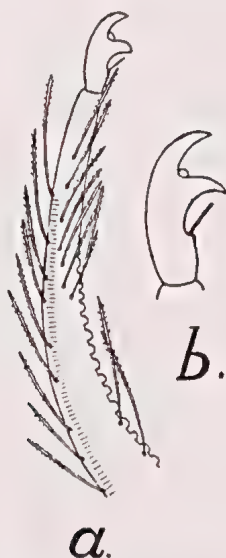


Fig. 5.—*Entomobrya mawsoni* n.sp.  
(a) Mucro and portion of dens ( $\times 392$ ). (b) Mucro, more greatly magnified. ( $\times 596$ .)

The microscopic structure of the distal end of the dens, and of the mucro, is shown in Text-fig. 5. The *dens* carries a series of minute crenulations or corrugations on the dorsal edge, and a series of fine short transverse lines arranged close to the ventral edge; both these structures are of the normal type met with in this and other closely allied genera. The hairs of the dens are also of the normal type for this genus, being slightly feathered and fairly stiff. The *mucro* is very short, with both teeth much curved, the dorsal tooth somewhat broader than the terminal, but of about the same length. Between the two teeth there is a very small blunt prominence. Near the base, the mucro carries a stiff *dorsal spine*, not reaching quite to the tip of the dorsal tooth.



*Ventral tube* fairly prominent, 0.4 mm. long when fully extended, usually appearing cylindrical; in the type specimen, an exerted bifid tip is visible.

*Colouration*, a pale semi-transparent yellowish brown, with patches of darker markings. These markings are either dark-brown or blackish, except on the legs, where they appear touched with bluish or purplish. On the head, besides the black eye-patches, there is a slightly darker mid-dorsal band; in the adult, the antennæ are dark brown. On the thorax, there is an irregular, dark, longitudinal, mid-dorsal band, and separate latero-ventral blotches on both meso- and meta-thorax. The legs are darkened on the trochanters, the tips of the femora, the whole of the middle tibio-tarsus, and the distal half or more of the fore and hind tibio-tarsi. On the abdomen, the first three segments have a dark mid-dorsal band, extending obliquely and sharply downwards and backwards along the sides of seg. 3, bordering seg. 4. On the posterior half of seg. 4, are two parallel but irregular dorsal bands, extending laterally downwards and backwards on either side, bordering seg. 5. There is also a dark patch anally.

*Types*:—Holotype, indicated by arrow, and paratype on slide No. AAE. I2, deposited in the Australian Museum, Sydney. A third specimen on slide No. AAE. I3, with paratypes of *Arrhopalites davidi* n.sp. Also two specimens, not mounted, placed in 70 per cent. alcohol, in Tube No. C. 24, with the original collector's labels "C. 24," and "Macquarie Island." All these deposited in the Australian Museum, Sydney.

*Habitat*:—Macquarie Island; collected by H. Hamilton. Collector's note:—"Common under stones in Victoria Penguin Rookery. Garden Bay, Macquarie Island. 20.8.12."

This species is dedicated to Sir Douglas Mawson, Leader of the Australian Antarctic Expedition. It appears to be fairly closely allied to *E. pulchra* Schöff, from Tierra del Fuego. (10.)

*Sub-order*: SYMPHYPLEONA.

*Family*: SMINTHURIDÆ.

*Genus*: ARRHOPALITES, Börner.

The Collection contains a number of mature and immature specimens of a small purplish-black Sminthurid, which appears to fit into this genus, on the following characters:—

Ventral tube smooth-walled, without any tubercles. (Sub-family *Sminthuridinæ*). No clubbed hairs on the distal end of the tibio-tarsus. Fourth joint of antennæ strongly annulated. Dorsal edges of mucro similar in shape.

The only other genera of *Sminthuridæ* recorded from the Sub-antarctic regions are *Sminthurinus* Börner and *Sminthurus* Latr. The former is at once distinguished

from *Arrhopalities* by having the fourth joint of the antennæ simple, without annulations, and the distal end of the tibio-tarsus with clubbed hairs. Both genera belong to the sub-family *Sminthuridinae*. The genus *Sminthurus* Latr., as now restricted, has a ventral tube with tuberculate walls, and also differs from both the above genera in the structure of its antennæ and other characters.

The species of *Arrhopalites* represented in the Collection appears to be new and is described below.

*ARRHOPALITES DAVIDI n.sp.*

(Text-figs. 6-8)

*Total length* of mature individual 1.4 mm., omitting antennæ and spring.

*Greatest breadth* (at middle of abdomen) 0.7 mm.

*Head* depressed, broadly oval, somewhat flattened dorso-ventrally.

*Antennæ* with the terminal (fourth) joint longer than the other three taken together, the total length being 0.9 mm., of which the fourth joint occupies 0.5 mm. Basal segment very short, the second about two-thirds as long as the third. A few small scattered hairs of normal structure on these two segments. Fourth segment with twelve or thirteen whorls of small hairs placed at equal intervals apart from base to apex, and indicating the divisions of this segment into separate annuli; apex moderately pointed. In most of the specimens the antenna is strongly bent between the third and fourth joints. (Text-fig. 6a.)

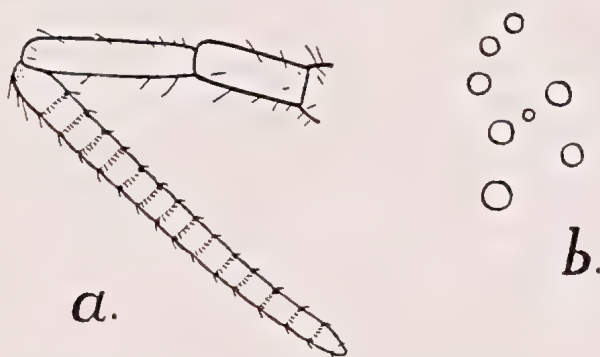


Fig. 6.—*Arrhopalites davidi* n.sp.  
(a) Antenna ( $\times 104$ ). (b) Group of ocelli ( $\times 392$ ).

*Ocelli* only visible in bleached specimens, eight on each side, arranged as in Text-fig. 6b. Seven of the ocelli are of medium to large size, the eighth very small and not easy to make out.

*Thorax* and *abdomen* as usual in this family, the *prothorax* forming a short neck, the rest of the thorax and abdomen forming a compact globular body, with the segmental divisions more or less obliterated, the two terminal segments much smaller, the fifth being of the usual protruding saddle-shaped formation.



*Legs* moderately short, slenderer than the spring; tarsal claws strongly built, sharp, and nearly twice as long as the empodial appendage. (Text-fig. 7.)



Fig. 7.—*Arrhopalites davidi* n.sp. Claw and empodial appendage of hind foot. ( $\times 368$ .)

*Ventral tube* with long, cylindrical arms of a very pale yellowish grey colour; when fully extended, these arms are about as long as the hind legs, but of somewhat stouter cross-section than the hind femora. The apex of each arm is sharply truncated, each arm being a hollow cylinder serving as the opening of a gland.

*Spring* 0.7 mm. long, the dens and mucro together only slightly longer than the manubrium, as measured in the backwardly directed position in the dead insect. *Mucro* relatively long and slender, about  $140\mu$  long, shaped as shown in Text-fig. 8.



Fig. 8.—*Arrhopalites davidi* n.sp.—Mucro and distal end of dens. ( $\times 368$ .)

**Colouration.**—Deep purplish-black above pale-greyish below; the ventral tube very pale yellowish-grey, the tarsal claws and the mucrones of the spring almost colourless,

**Types.**—Holotype, indicated by arrow, and four paratypes, on slide No. AAE. 13., in company with a specimen of *Entomobrya mawsoni* n. sp. Also a number of paratypes in 70 per cent. alcohol, in tube No. C. 25. All the above placed in the Australian Museum, Sydney.

**Habitat.**—Macquarie Island. Collected by H. Hamilton. Collector's note to tube No. C. 25.—“Jumping Arthropods. Common under stones, in crevices of rock, and under moss. Have tremendous jumping powers when touched. North End, Macquarie Island. 1.19.12 (*sic*). In 70 per cent. alcohol.”

There were also other specimens of this species in a tube numbered C. 43, undated, and without label.

This species is dedicated to Professor T. W. Edgeworth David, C.M.G., D.Sc., F.R.S., Geologist to Sir E. Shackleton's Antarctic Expedition, and Professor of Geology in the University of Sydney.

No other species of this genus is known from Antarctic or Sub-antarctic regions. But a species of the allied genus *Sminthurinus* (*Sm. granulatus* End.) has been recorded from Crozet Island, while the genus *Sminthurus* itself is represented by three species in Tierra del Fuego and by an undetermined species in Kerguelen Island. (5.10.11.)

#### *Order* : HYMENOPTERA.

#### *Sub-order* : CLISTOGASTRA OR APOCRITA.

#### *Division* : VESPIFORMIA.

#### *Family* : DIAPRIIDÆ.

This family contains small and sometimes wingless Hymenoptera of rather obscure affinities, but usually placed near the beginning of the Vespiformia, and thus coming between the Chalcidoidea and the Ants. To the uninitiated, the wingless species of this family would probably be taken for small Ants; but they differ from the true Ants in many characters, notably in the much more generalised form of the antennæ and the base of the abdomen.

The family may be defined as follows :—

Winged or wingless Vespiformia, with the trochanters two-jointed, but the distal joint difficult to make out, as it is generally closely attached to the femur. Mandibles with three teeth or less situated towards the apex. Antennæ inserted well above the clypeus, near the middle of the face, and usually on a raised frontal prominence, with the more distal joints forming a more or less distinct club; not elbowed, as in the Ants. Fore legs with an antennal comb. Gaster more or less globular. Wings, when present, with or without a basal cell; the marginal vein in the forewing linear, not triangularly thickened. Small or minute insects, generally blackish.

A few specimens of a small wingless species of this family were present in the Collection, in tube No. C. 2\*, to which was attached the following Collector's note:—"Small carib-like (*sic*) beetle, found under stones near sea-coast and in sites of Penguin rookeries. North End, Macquarie Island. 16.8.12. In 70 per cent. alcohol."

Some of these tiny insects were sent by me to Professor W. M. Wheeler of Harvard University, who handed them over to his colleague Professor C. T. Brues. The latter determined them as belonging to a new wingless genus of *Diapriidae*, which he has called *Antarctopria* n.g., the species being described under the name *Antarctopria latigaster* n. sp. The descriptions of both genus and species are given in Appendix A.

Genus: *ANTARCTOPRIA* n.g. Brues.

*ANTARCTOPRIA LATIGASTER* n.sp. Brues.

(Text-figs. 9, 10, and 22.)

(Description of genus and species in Appendix A, pp. 27, 28.)

Types.—Holotype in Australian Museum, Sydney, in tube No. Co. 2. Paratypes also placed in tube No. Co. 2 at bottom, separated from type by a strong plug of cotton wool. Other paratypes in Coll. Bussey Institute, Forest Hills, Mass., U.S.A., and in Coll. Tillyard.

The following additional notes on this species are of interest:—

The *antennal comb*, which, as Professor Brues informs me, has not been used for taxonomic purposes in this family, is of very interesting structure. I have shown it

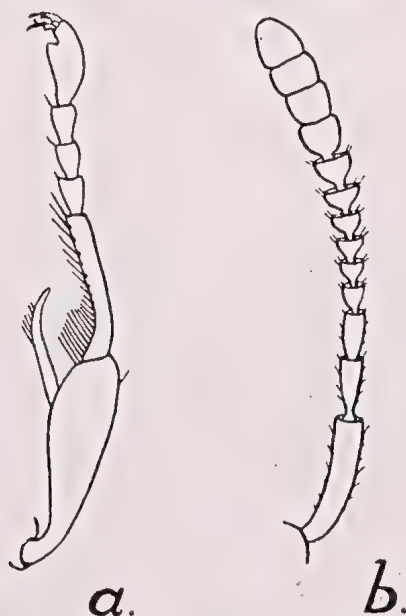


Fig. 9.—*Antarctopria latigaster* n.sp. Brues. Female.  
(a) Fore leg, showing antennal comb ( $\times 108$ ). (b) Antenna. ( $\times 52$ .)

\* It is clear, I think, that the letters accompanying the numerals on the tube-labels were originally intended to indicate the Orders of Insects contained inside; thus C = Collembola, Co = Coleoptera. But the Diptera and Lepidoptera are also placed in tubes marked Co., as well as this little Hymenopteron, which the collector mistook for a Carabid.—R.J.T.



in Text-fig. 9a, and alongside it (Text-fig. 9b) the *antenna*, (at about one-half the magnification of the comb), so that its method of use may be more easily appreciated. The comb is formed by specialisation of the tibia of the foreleg, with its spur, and by the arrangement of the most basally situated setæ of the metatarsus as a series of closely placed bristles, much like the slender teeth of a fine hair-comb. The large curved tibial spur acts as a retinaculum, keeping the antenna pressed close against the row of fine teeth on the comb. The antenna is drawn through the comb from the base upwards. Thus, the base of the antenna being narrow, the insect has no difficulty in inserting it between the retinaculum and the comb, and the cleaning process becomes more effective distally, as the antenna widens out. It is quite likely, also, that the tibial spur may have some power of springing, so that it gives way to the antenna slightly during the passage of the wider distal joints, and then moves back into place when the process is completed.

This process has not, of course, been actually observed in this insect, but may reasonably be inferred from the known action of the comb in other Hymenoptera and from its structure in this species.

Text-fig. 10 gives an outline of the ventral side of the female, showing the ovipositor not projecting beyond the end of the abdomen.

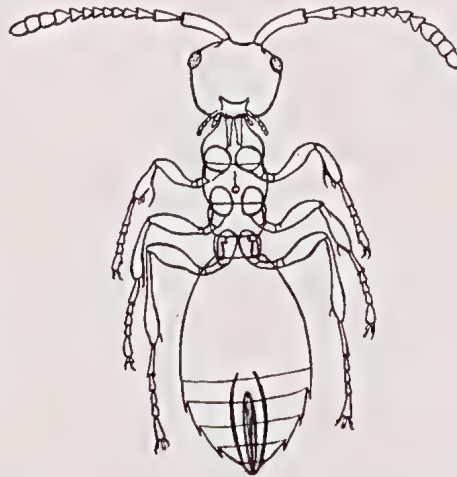


Fig. 10.—*Antarctopria latigaster* n.sp. Brues. Female. Ventral view, showing ovipositor. ( $\times 24$ .)

*Order* : COLEOPTERA.

*Sub-order* : POLYPHAGA.

*Division* : STAPHYLINIFORMIA.

*Family* : STAPHYLINIDÆ.

The Collection included six imagines and about a dozen larvæ of a small Staphylinid Beetle belonging to the genus *Homalium*. Some of these were contained in tube No. Co. 1, to which was attached the following Collector's note:—"Small beetles and larvæ, common under stones and decaying animal matter. North End, Macquarie



Island. 3.7.12. In 70 per cent. alcohol." Others were in an unnumbered tube, inside which was the following note on a slip of paper:—"Under rotting bones. Macquarie. Nov., 1913. H.H."

A number of these were sent to Mr. A. M. Lea, the well-known Coleopterist of the South Australian Museum, who described the imago as a new species of *Homalium*.

Genus: HOMALIUM.

HOMALIUM VARIIPENNE *n.sp.* Lea.

(Text-figs. 11, 12.)

(Description of species in Appendix B, p. 29.)

Type.—Holotype in Australian Museum, Sydney, mounted on card, together with a paratype imago mounted on its back, and a larva also on same card; No. AAE. 14. Co-type and a number of larvæ in tube No. Co. 1, in 70 per cent. alcohol, also in Australian Museum. Another paratype in South Australian Museum; No. 1, 7957.

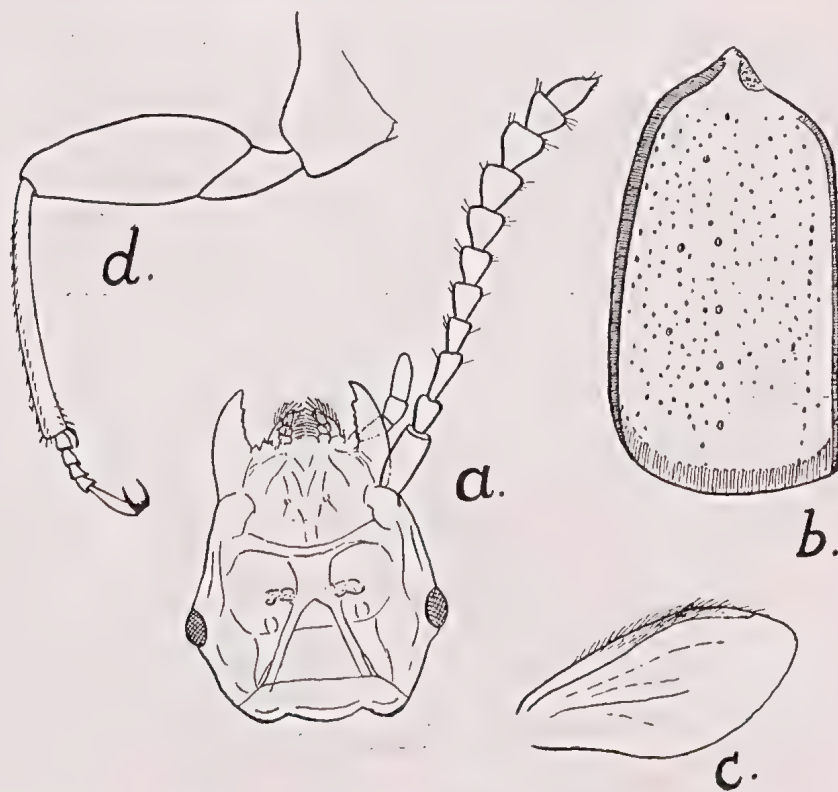


Fig. 11.—*Homalium variipenne* *n.sp.* Lea.

(a) Head of a cleared specimen, showing antenna (that of left side omitted), mouth-parts and tentorium. (b) Elytron, viewed from the inside. (c) Hind wing. (d) Hind leg. (All  $\times 46\frac{1}{2}$ .)

As Mr. Lea's description is not accompanied by any figures, I give, in Text-fig. 11, figures of the head, elytron, hind wing, and hind leg, all much magnified, and drawn from a cleared and mounted specimen, one of two which I have retained in my collection.

In Text-fig. 12, I also show the head and extremity of the abdomen of the larva. The larvæ in the Collection range from about 2.5 mm. to 4 mm. in length, the latter being probably full grown or nearly so. They are long, rather slender, sub-cylindrical in shape, with each abdominal segment distinctly wider distally than basally. Their

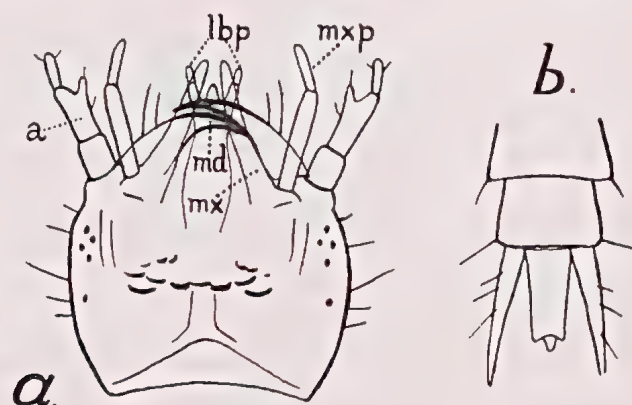


Fig. 12.—*Homalium variipenne* n.sp. Lea. Larva.  
(a) Head of a cleared specimen; *a*, Antenna. *lbp*, Labial palpi. *md*, Mandible. *mx*, Maxilla. *mxp*, Maxillary palpus ( $\times 87\frac{1}{2}$ ). (b) End of abdomen, showing anal papilla and appendages of seg. 9. ( $\times 46\frac{1}{2}$ .)

general colour is of a pale, rather dirty, yellow. The legs are rather short, the anal papilla or sucker and the paired appendages of seg. 9 (the so-called *cerci*) rather long and conspicuous. The antennæ have the middle joint bifid distally. The mandibles, though strongly formed, carry no internal teeth. Both maxillary and labial palpi are two-jointed, the basal joints of the former being very long.

*Larval Type* on Slide No. AAE. I5, with two paratypes. The type is indicated by an arrow.

*Habitat*.—Macquarie Island.

*Order*: LEPIDOPTERA.

*Sub-order*: HETERONEURA.

*Super-family*: PYRALIDINA.

*Family*: PYRALIDÆ.

*Sub-family*: CRAMBINÆ.

The Lepidoptera are represented in the Collection by a single well-grown caterpillar, in good condition, preserved in 70 per cent. alcohol. As this is the first record of the occurrence of a moth on Macquarie Island, it seemed worth while studying the caterpillar carefully, with a view to placing it as nearly as possible in its correct systematic position.



For this purpose, careful drawings were made of the position of the ocelli on the head, the arrangements of the crochets on the abdominal prolegs, and the chaetotaxy of the prothorax, mesothorax, and fifth and ninth abdominal segments. The result is that the caterpillar is determined, without any doubt whatever, to be a Pyralid belonging to the sub-family *Crambinae*, and therefore almost certainly a feeder on the tussock-grass that is so abundant on the Island.

In this connection, the Collector's note attached to tube No. Co. 5, in which the caterpillar was placed, runs as follows :—" Found on grassy tuft, near West Point, Macquarie Island. Feb. 9th, 1913. In 70 per cent. alcohol."

As there is a possibility that species of *Crambinae* may be bred from caterpillars found on this or other sub-antarctic islands in the future, I think it best to give a full description of the insect, with special reference to those structures which determine its systematic position :—

*Description of Caterpillar belonging to the Sub-family CRAMBINÆ.*

(Text-figs. 13-17.)

*Total length* 13.5 mm. *Shape*, sub-cylindrical, the head of medium size, the last three abdominal segments tapering slightly. *General colour* of the preserved specimen, yellowish brown, with the head and prothoracic shield very dark brown, the spiracles blackish, and the pinacula brown, more or less conspicuously darker than the general body colouration. *Setæ* dark brown or black, mostly very distinct. This colouration almost certainly indicates a fairly dark-green caterpillar when alive, with darker head and prothoracic shield, and fairly conspicuous markings, perhaps of olive green colour. (Text-fig. 13.)

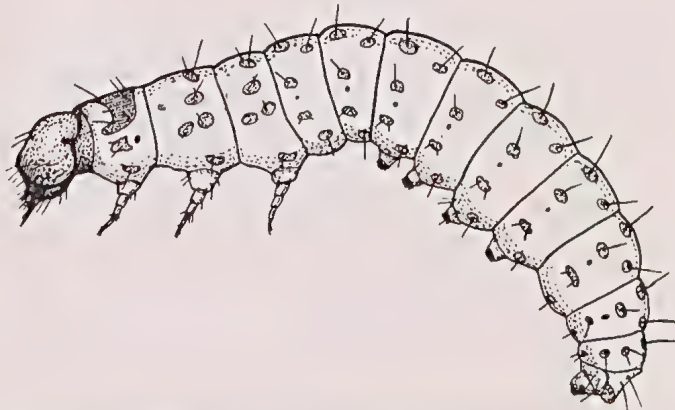


Fig. 13.—Caterpillar of a Crambine moth, found on tussock grass. ( $\times 7\frac{1}{2}$ .)

*Head* with the ocelli arranged as shown in Text-fig. 14. In the dorsal group, the first, second, and third stand well apart, forming an obtuse-angled isosceles triangle with the second ocellus at its vertex. The fourth dorsal ocellus is close up to the third, both being very close to the antenna. In the ventral group, the more anterior,

or sixth, ocellus is smaller and less conspicuous than the fifth, and lies directly below the fourth dorsal. Setæ are present in the ocellar region, as shown in Text-fig. 14.

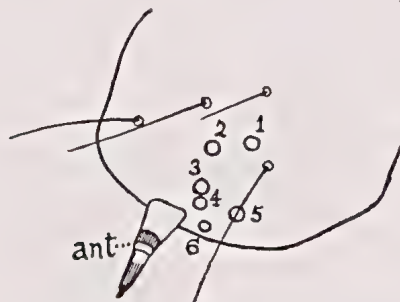


Fig. 14.—Region of antenna and ocelli of left side of head of caterpillar shown in Text-fig. 13. *ant.*, Antenna. 1, 2, 3, 4—the four ocelli of the dorsal group; 5, 6—the two ocelli of the ventral group. ( $\times 36$ .)



Fig. 15.—Proleg of sixth abdominal segment of caterpillar, shown in Text-fig. 13. ( $\times 104$ .)

*Spiracles* normal, the prothoracic and that of abdominal seg. 8, the largest, the former distinctly oval.

*Thoracic Legs and Abdominal Prolegs* both normally formed, the latter somewhat short and stout. The *armature of the prolegs* consists of a complete circle of hooks of three sizes, as shown in Text-fig. 15. The bases of all the hooks lie on the one circumference, so that the circle is *uniserial*. The largest hooks are separated from one another by hooks of medium size alternating with them, while the smallest hooks are intercalated between all those of the two larger sizes. The circle is most complete on the part furthest from the middle line of the abdomen; towards the middle

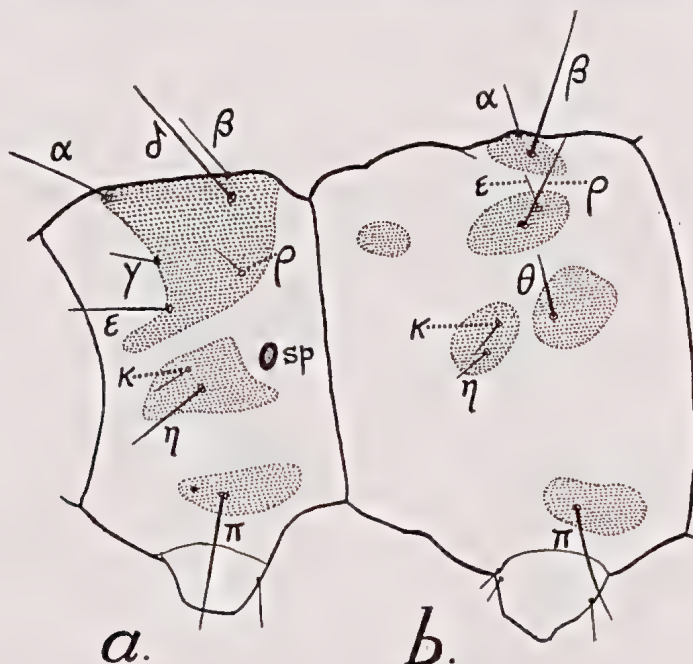


Fig. 16.—Chaetotaxy of prothorax (a) and mesothorax (b) of the caterpillar shown in Text-fig. 13. *sp.*, Prothoracic spiracle. The Greek letters indicate the setæ, the nomenclature being that of Fracker. The large prothoracic shield and the pinacula carrying the setæ are shaded. The legs are omitted except only the coxæ. ( $\times 30$ .)



line, the triordinal arrangement degenerates into a simpler arrangement, the largest hooks being absent, and the smallest ones somewhat irregularly developed here and there between the predominant middle-sized ones. (Text-fig. 15.)

*Chaetotaxy*.\*—The outstanding characters of the chaetotaxy are that there are no secondary or tufted setæ developed, and each proleg only bears four setæ, viz., *pi*, *nu*, *tau*, and *sigma*, of which the last, lying on the inner side towards the middle line of the body, is not visible in Text-fig. 16a. The seta *theta* is absent on all except the meso- and meta-thorax. The *kappa*-group is represented by a single pinaculum bearing two setæ, *kappa* and *eta*, on every segment from the prothorax to the eighth abdominal (Text-fig. 15a, b, 16a). The ninth abdominal segment has only a single seta (*eta*) on the pinaculum which is in line with the eighth abdominal spiracle, but the pinaculum situated above this carries two setæ, *rho* and *epsilon*.

Text-figs. 16 and 17 show the chaetotaxy of the prothorax, the mesothorax, and the fifth and ninth abdominal segments. The combination of the form of the armature of the prolegs with the presence of *kappa* and *eta* on a single pinaculum on the

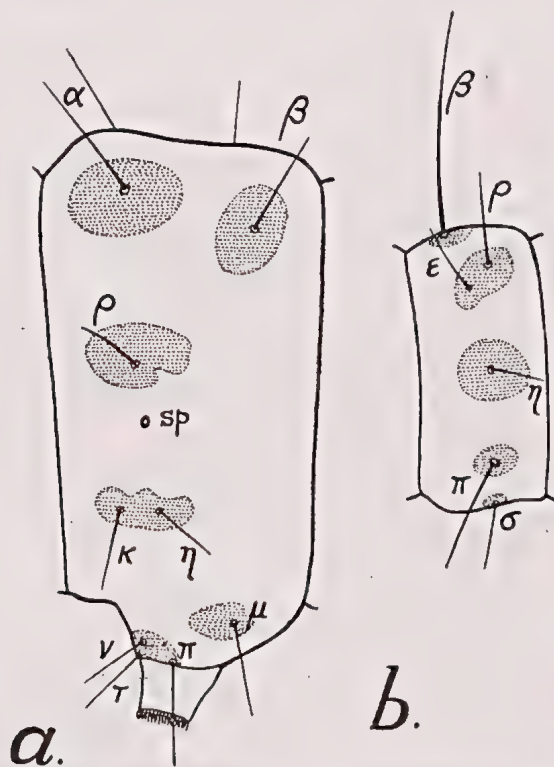


Fig. 17.—Chaetotaxy of the fifth (a) and ninth (b) abdominal segments of the caterpillar shown in Text-fig 13. *sp.*, Spiracle of the fifth segment. The Greek letters indicate the setæ, the nomenclature being that of Fracker. The pinacula carrying the setæ are shaded. ( $\times 30$ .)

prothorax, and with the presence of *eta* only on the corresponding pinaculum of segment 9, while *theta* is absent from all segments except the meso- and meta-thorax, marks this larva definitely as belonging to the *Crambinae*.

\* The nomenclature for the setæ adopted here is that of Fracker: "The Classification of Lepidopterous Larvæ," Illinois Biological Monographs, vol. II. No. 1, July, 1915. pp. 1-169, ten plates.

The larvæ of different genera of *Crambinae* being closely similar, it is not possible to indicate the generic position of the larva here described.

In 1909, Meyrick (9) described a new genus, *Protyparcha*, and new species *P. scaphodes*, belonging to the sub-family *Crambinae*, from open tussock-grass country at Carnley Harbour, Auckland. It seems very probable that the caterpillar here described may belong to a species of this or of some closely related genus.

The specimen is placed in tube No. Co. 5, in 70 per cent. alcohol, and has been deposited in the Australian Museum, Sydney, together with the types of the other species dealt with in this paper.

Order : DIPTERA.

Sub-order : NEMOCERA.

Family : TIPULIDÆ.

(Text-figs. 18-20.)

This family is represented in the Collection by a single larva and by seven pupæ. The former is contained in tube No. X. 3, with the following Collector's note :— "Larva. Probably of species of *Tipula*, from stagnant pool near Huts. North End, Macquarie Island. 30.7.12. In 4 per cent. formalin." The pupæ are contained in tube No. Co. 6, with the following Collector's note :—"Pupæ. Of *Tipula* species. Found protruding from mud in stagnant pool. North End, Macquarie Island. Jan. 29th, 1913. In 70 per cent. alcohol."

From the dates and localities given, it seems exceedingly probable that the larva and pupæ both belong to one and the same species of Tipulid.

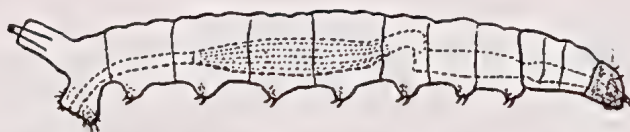


Fig. 18.—Larva of a Tipulid, found in a stagnant pool. ( $\times 5$ .)

Text-fig. 18 shows a profile view of the larva, which is 10.5 mm. long, and probably not fully grown. I have indicated the course of the alimentary canal, which



Fig. 19.—A pair of abdominal prolegs from the larva shown in Text-fig. 18, much enlarged to show their armature. ( $\times 108$ .)

was visible by transmitted light. The ventral prolegs on the abdominal segments are fairly prominent, and each pair is strongly armed with stout, thorn-like spines, as shown in Text-fig. 19. The colour of the larva is a uniform dark-brown.

Text-fig. 20 shows a profile view of the pupa, which appears to be of the usual Tipulid form, without any striking peculiarities. The specimens range from 10 to 12 mm. in length. The colouration of the head and wing-sheaths is a very dark-brown, of the thorax a medium brown, and of the abdomen a light yellowish-brown.



Fig. 20.—Pupa of the same Tipulid as that of which the larva is shown in Text-fig. 18. ( $\times 5$ .)

This larva and pupæ may very probably belong to the genus *Dicranomyia*, or to some closely allied genus. A species of this genus has been described from Auckland Island by Lamb (8).

The specimens are deposited in the Australian Museum, Sydney, in the tubes in which they were originally placed by the Collector.

*Family* : PSYCHODIDÆ.

*Genus* : PSYCHODA.

(Text-fig. 21.)

Two specimens of a species of this well known genus were found in rather poor condition inside tube No. C. 24. As they had not been noticed by the Collector, who mentioned only the presence of Collembola inside this tube, I think it is very unlikely that they belong to the fauna of the Island. They probably became introduced into



the tube with the liquid medium when it was poured in, and may, therefore, be assumed to belong to some common and widely distributed species, or else to a species that may have been breeding out on the ship. As the paraffin wax sealing the cork of the tube was intact when I first examined it, it is clear that the flies were not introduced subsequently to the placing of the Collembola inside the tube.

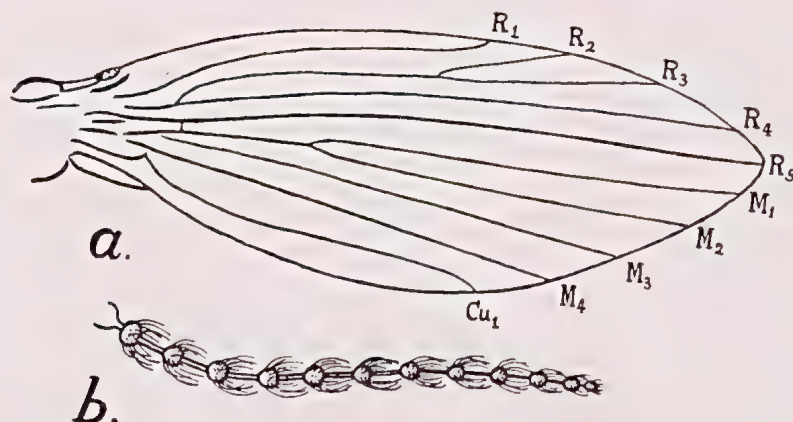


Fig. 21.—*Psychoda* sp. indet., found inside tube No. C. 24.  
 (a) Fore-wing ( $\times 16$ ); R<sub>1</sub> to R<sub>5</sub>, the branches of the radius; M<sub>1</sub> to M<sub>4</sub>, the branches of the media; Cu<sub>1</sub>, First cubitus.  
 (b) Antenna. ( $\times 52$ .)

In Text-fig. 21, I have drawn the forewing and antenna of this little Psychodid. It should be noted that the costal margin is less convex than usual, and that the fork of R 2 + 3 arises far distad, nearly up to the distal end of R1. I do not know of any Australian species, either named or unnamed, which shows anything approaching these characters.

Two specimens, on slide No. AAE 16, in the Australian Museum, Sydney.



## APPENDIX A.—HYMENOPTERA.

A NEW GENUS OF *DIAPRIIDÆ* FROM MACQUARIE ISLAND.

By CHARLES T. BRUES, Bussey Institution, Harvard University.

The Mawson Expedition to the Antarctic secured some specimens of apterous *Diapriidæ* among the few species of insects found on Macquarie Island. These were sent by Dr. R. J. Tillyard, who wished to include an account of them in his report on the insects from the Islands.

The specimens present no striking peculiarities at first glance, in fact are of quite generalised structure. I was surprised, therefore, to find on more careful examination that they could hardly be placed in any genus previously characterised. In keys to genera they will run near *Paramesius* or *Spilomicrus* on account of the 13-jointed antennæ, unarmed thorax, non-elongated face, gradually clavate antennæ, &c. In the configuration of the head, thorax, and abdomen, however, they differ considerably as is evident from the generic description. With *Malvina* Cameron it probably has some affinities, although differing in the unarmed propodeum. I would be inclined to regard it as a primitive form, with the wings lost in response to its immediate environment.

*ANTARCTOPRIA* Gen. nov.

Head quadrate or somewhat transverse; wide behind the eyes, not globose or subglobose; ocelli minute, in a small triangle; eyes small, clothed with sparse long hairs like those on the head; frontal prominence very distinct, but small; antennæ 13-jointed, gradually clavate, the club including five or six joints, first flagellar joint rather long, second to fifth small, moniliform; mandibles bidentate; maxillary palpi 5-jointed; labials two or three, probable three. Thorax much narrower than the head, about three times as long as wide; prothorax simple, woolly in front, slightly visible above at middle; mesonotum punctate, without furrows; scutellum transverse, truncate behind, with a rather shallow furrow at the base; tegulæ present; wings in the form of little hooks that reach only to the base of the propodeum. Propodeum short, nearly cylindrical, woolly, rugose, slightly raised to apex which is carinated and suddenly truncate. Abdomen large, oval, swollen, petiole extremely short, about one-third as wide as thorax and four times as broad as long; second segment occupying two-thirds of the abdomen, widest near apex, where it is nearly three times as broad as the thorax; third to fifth segments rapidly narrowed; following minute, forming the conical apex. Legs with the femora and tibiæ clavate; claws slender, simple. Body clothed with sparse, rather long, glistening hair.

The transverse-quadrate head and broad abdomen with the narrow thorax give the insect almost the habitus of a wingless Cynipid and the body lacks the highly polished appearance of most Diapriidæ.

Genotype the following species :—

ANTARCTOPRIA LATIGASTER, *sp. nov.*

(Text-figs. 9, 10, and 22.)

Length 2.0–2.7 mm. Black, the thorax and legs ferruginous or fuscous; antennal scape and the pedicel in part, rufous; palpi yellowish; head behind dull rufous. Head when seen from above about one-half wider than long; the temples about twice as wide as the eyes; rounded behind. Eyes nearly round; ocelli in a somewhat flattened triangle, the posterior pair closer to one another than to the eye-margin. Antennal scape half as long as the remainder of the antenna, not distinctly bispinulose at tip; pedicel twice as long as wide; first flagellar joint as long, but more slender; four following joints moniliform, growing scarcely wider, following gradually broader, and transverse, except the last, and forming the club. Mesonotum with a few punctures; groove at base of scutellum with a more or less distinct median raised line. Propleuræ smooth; mesopleuræ with short horizontal striæ behind. Petiole of abdomen rugose, not very distinctly fluted; body of abdomen inpunctate, sparsely clothed with pale erect hairs, as are also the remainder of the body and the legs; second segment about twice as long as wide.

Types :—Holotype and paratypes from Macquarie Island. Holotype in Australian Museum, Sydney. No. Co.2; paratypes in Coll. Bussey Inst., and Australian Museum.

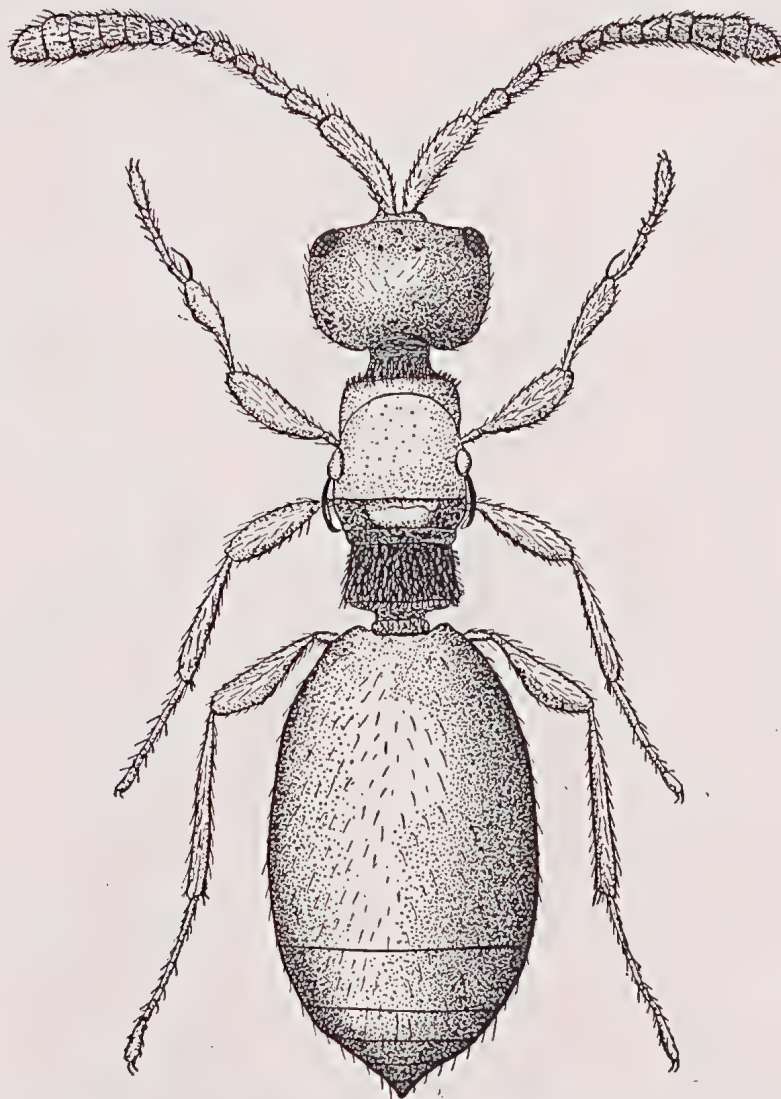


Fig. 22.—*Antartopria latigaster* n.sp. Brues. Viewed from above. ( $\times 60$ .)  
(Reproduced from a drawing sent by Professor C. T. Brues.)



## APPENDIX B.—COLEOPTERA.

## DESCRIPTION OF A NEW STAPHYLINID BEETLE FROM MACQUARIE ISLAND.

By A. M. LEA, F.E.S., South Australian Museum, Adelaide.

*HOMALIUM VARIIPENNE, n.sp.*

Piceous-brown; six basal joints of antennæ, palpi, and legs more or less flavous; elytra varying from entirely dark to almost entirely flavous. Head, prothorax, and elytra with a few short, erect setæ, upper surface of abdomen with short and not very dense, ashen pubescence, almost absent along middle; under surface more sparsely clothed, the sterna more sparsely than the abdomen.

*Head* (excluding neck) sub-triangular; with two small deep foveæ between eyes, and a shallow depression near each antennæ; surface finely shagreened and minutely punctate. Antennæ passing middle coxæ; first joint rather stout, as long as second and third combined, second and fourth sub-equal in length, and distinctly shorter than third, sixth—tenth equal, distinctly wider than the four preceding ones, eleventh about once and one-half the length of tenth. *Prothorax* rather strongly transverse, widest near apex, sides rounded in front, oblique to base; with a conspicuous but shallow longitudinal depression on each side of the middle, the depressions more opaque than the adjacent surface; two small foveæ at apex immediately behind those on head; surface finely shagreened, and with numerous small punctures. *Elytra* almost as long as head and prothorax combined, base much wider than base of prothorax, hind angles widely rounded off; with small, dense, sharply defined punctures. *Abdomen* elongate, shagreened and with small dense punctures; margins slightly wider than scutellum. *Legs* moderately long, length to apex of elytra  $2\frac{1}{2}$ , of abdomen,  $4\frac{1}{4}$  mm.

*Habitat.*—Macquarie Island.

The setæ on the upper surface, although erect, are so short and sparse that they could easily escape notice; in some lights, the abdominal pubescence has an almost golden gloss. Of the five specimens before me, two have a large flavous spot on each shoulder; each spot on the outside extends to the margin, on the inside about half-way to the suture, and posteriorly to about one-third from the apex; on a third specimen, the spots are similar in size, but vaguely indicated; on a fourth, the elytra are flavous, except for a narrow infuscation of the suture, and for a rather narrow apical border (this specimen has the prothorax with a more reddish tone than the others); the fifth



specimen has the elytra entirely dark; on all of them the abdomen is rather pale at the tip. The elytral punctures, especially posteriorly, exhibit a tendency to become longitudinal scratches.

The species is allied, but not very closely so, to *H. morrisoni* (Blackburn), but is considerably larger, cephalic and prothoracic punctures smaller and the abdominal ones larger, antennæ longer, &c.

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